1-1-2019

On the relationship between resilience, meaning, and hardiness: a bi-factor exploratory and confirmatory analysis

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ON THE RELATIONSHIP BETWEEN RESILIENCE, MEANING, AND HARDINESS:

A BI-FACTOR EXPLORATORY AND CONFIRMATORY ANALYSIS

A Dissertation
presented in partial fulfillment of requirements
for the degree of Doctor of Philosophy
in the Department of Psychology
The University of Mississippi

By

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August 2019

ABSTRACT

Meaning in life, resilience, and hardiness have been conceptualized in a variety of ways. Some researchers theorize that these constructs share significant overlap. The goal of the current study was to examine how much overlap exists between these concepts. Three thousand and ten participants from a university in the Midwest and a university in the South completed measures of meaning in life, resilience, and hardiness. It was hypothesized that some items from these measures would create a unidimensional model while some items would create multidimensionality. Hypotheses that incorporated both models were important as there is disagreement within the literature with regard to how much overlap exists between these concepts. To assess construct overlap, factor-loading patterns were analyzed using bi-factor exploratory factor analysis (EFA) and bi-factor confirmatory factor analysis (CFA) statistics. Following data cleaning analyses, 804 participants were used in the bi-factor EFA analyses and 804 participants for the bi-factor CFA. All items from the meaning in life and resilience measures and 13 out of 18 items from the hardiness measure loaded onto the general factor. This general factor was conceptualized as global resilience. With regards to multidimensionality that presented in the model, one resilience measure comprised the second factor, all but one item from the other resilience measure comprised the third factor, and finally the fourth factor within the model was comprised of one meaning in life item and six items from the hardiness measure. This study was important, as it was the first to support that the three constructs share significant

overlap and create a general factor. A more cohesive conceptualization of this general factor is needed to create greater scientific clarity within the literature.

DEDICATION

This dissertation is dedicated to my mother and grandfather. Without their love and support, I would have been unable to accomplish all of my academic goals. I love and miss you both.

LIST OF ABBREVIATIONS AND SYMBOLS

BRS	Brief Resilience Scale
CFA	Confirmatory Factor Analysis
CD-RISC	Connor-Davidson Resilience Scale
EFA	Exploratory Factor Analysis
MLQ	Meaning in Life Questionnaire
MLQ-P	Meaning in Life Questionnaire—Presence Subscale
PVS	Personal Views Survey
PVS III-R	Personal Views Survey III-R
PIL	Purpose in Life Test
PIL-SF	Purpose in Life Test – Short Form
RS-14	14-Item Resilience Scale
RSA	Resilience Scale for Adults
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Residual
TLI	Tucker–Lewis Non-Normed Fit Index

ACKNOWLEDGEMENTS

I would like to thank my committee members, Dr. Stefan Schulenberg, Dr. Elicia Lair, Dr. Danielle Maack, and Dr. John Green, for their guidance and feedback during this project. I would also like to thank Dr. Erin Buchanan who I consulted with extensively on my statistics.

I would like to thank Dr. Bethany Aiena for showing me how to succeed in graduate school. Thank you to Dr. Vanessa Moynahan, for always reminding me to work harder and be better. I would like to thank my friends Victoria Torres, Rob Reyes, Dr. Mathew Tkachuck, Dr. Emmie Hebert, Dr. Brooklee Tynes, Gina Boullion, Dr. Solomon Kurz, and Jeff Pavlacic for their unrelenting support and encouragement.

Finally, thank you to Benjamin Suma. You challenge me, support me, inspire me, and make life sweeter. Thank you for sitting with me while I wrote this document and thank you for supporting me at my defense of this document.

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I. INTRODUCTION

Meaning in life, resilience, and hardiness have been conceptualized, defined, and measured in a variety of ways over the years (Bartone, 2006; Herrman et al., 2011; Park & George, 2013; Windle, Bennett, & Noyes, 2011). Because there is no universal definition, conceptualization, or measurement tool for each of these respective constructs, drawing conclusions from the literature is difficult (e.g., Cosco et al., 2017; Davydov, Stewart, Ritchie, & Chaudieu, 2010; Fletcher & Sarkar, 2013; Hu, Zhang, & Wang, 2015). According to some conceptualizations, these three variables are viewed as the same construct, while other conceptualizations maintain they are separate, but highly correlated constructs (e.g., Aiena, Buchanan, Smith, & Schulenberg, 2016; Bonanno, 2004; Herrman et al., 2011; Maddi, 2004; Park, 2013; Smith, Epstein, Ortiz, Christopher, & Tooley, 2013; Steger, 2012; Wagnild, 2009a; Windle et al., 2011).

The goal of the current study was to identify the factor overlap between meaning in life, resilience, and hardiness measurement tools and consequently clarify interrelations between these three variables. These three concepts were specifically chosen, as each have been associated with positive medical and mental health outcomes (e.g., Arnetz, Rofa, Arnetz, Ventimiglia, & Jamil, 2013; Hasel, Abdolhoseini, & Ganji, 2011; Maddi, 1999; Schulenberg, Hutzell, Nassif, & Rogina, 2008; Tugade & Fredrickson, 2004; Weathers, Aiena, Blackwell, & Schulenberg, 2016). Subsequently, being able to compare research findings and understand how

these variables relate could further programs of study that investigate ways to promote adaptive outcomes following an adverse event. Most people will experience some form of trauma in their lifetime, with some researchers reporting that around 90% of the population will witness at least one traumatic event in the course of their life span (American Psychiatric Association, 2013; Kilpatrick et al., 2013). Bolstering protective factors before people experience a potentially traumatic event and helping those who struggle to return to normal functioning following a traumatic event are important endeavors within the mental health profession. Refining conceptualizations of meaning in life, resilience, and hardiness and exploring if these concepts are the same will create less ambiguity within the field of positive psychology and may have significant clinical implications. Researchers and clinicians could begin using one term instead of three to describe adaptive coping. Moreover, researchers could examine what techniques within this singular construct may bolster adaptive coping beyond others, whether it is enhancing perceived meaning, hardy characteristics, or resilience protective factors.

However, before exploring the potential overlap of these constructs in depth, it is essential to define meaning in life, resilience, and hardiness and examine how these constructs are measured to illuminate ambiguity between and across studies comparing the variables. Meaning in life will be the first concept discussed, followed by resilience and then hardiness. After all three constructs have been discussed independently, the relationship between the three variables will be explored.

Introduction to the Concept of Meaning in Life

While meaning in life has been a topic of interest to scholars for centuries, the modern scientific study of meaning in life can be attributed to a variety of theorists and practitioners, Viktor Frankl (1959/2006) being a prominent example. As documented in his seminal work,

Man's Search for Meaning (1959/2006), Frankl witnessed firsthand the importance of meaning in life when he was a prisoner in concentration camps during World War II. According to Frankl, captives in the concentration camps had two options: submit to the Nazi officers and be reduced to despair or choose to discover meaning in the experience and be elevated to hope. In this way, even though the prisoners lost their physical freedoms, and were threatened with death at any moment, they still had the mental and emotional freedom to uncover meaning in the experience by choosing perspective.

While Frankl could not physically escape the concentration camps, he was able to exercise choice by changing his attitude, consequently maintaining hope, optimism, and finding meaning through thoughts of one day reuniting with his family and through his work while in the camps. More specifically, Frankl was able to practice as a doctor, which in turn provided him a sense of purpose in the concentration camps. Additionally, while in the camps, he mentally reconstructed and rewrote one of his manuscripts about his theory of what drives human beings, which again gave him a sense of purpose and hope. As a result, by discovering meaning in his concentration camp experiences, he established a purpose and a choice that was individual and internal rather than submit to the despair inherent in his situation.

Frankl theorized that meaning gives a person a "why" for existence and this "why" serves as a motivator to accomplish everyday tasks and overarching life goals (1959/2006, p. 76). According to Frankl, a crucial aspect of being human is to discover meaning in any given situation and life overall (Frankl, 1965). A person's sense of meaning is therefore dependent on their particular context and values. Accordingly, people can uniquely construct meaning given their context (Frankl, 1966). When confronted with a stressor or hardship, the perception of meaning in life may facilitate one's recovery and potential growth from that stressor as it did for

Frankl in the concentration camps. Meaning gives individuals motivation to move forward through arduous and unimaginable events.

Most researchers operationalize meaning in life as one's ability to find a sense of coherence or purpose (e.g., Bering, 2003; Florez, Schulenberg, Lair, Wilson, & Johnson, 2018; Martela & Steger, 2016; Reker & Wong, 1988). Although this terminology seems like a simplistic definition, this characterization is actually quite complex. This definition involves an individual's desire to establish a sense of purpose (Park, 2010a, 2013), to find meaning in events, and link these events into a meaning in life framework, a framework Park (2010a) refers to as meaning making and Frankl refers to as ultimate meaning (Baumeister, 1991; Florez et al., 2018; Frankl, 1959/2006; Steger, 2012; Wong & Wong, 2012; Zika & Chamberlain, 1992). However, when many think about meaning in life, they tend to think about the presence of meaning in life or the perception that one's life has meaning (Steger, Frazier, Oishi, & Kaler, 2006).

Researchers exploring meaning in life have found positive correlations with an assortment of desired health and psychological outcomes. Meaning in life predicts higher levels of hope and subjective well-being (Yalçin & Malkoc, 2015). Moreover, presence of meaning in life contributes to overall self-reported wellness by increasing consciousness of social support systems (Ryff & Singer, 1998; Savolaine & Granello, 2002). Increased social support cognizance in turn increases self-awareness of values, identity, and facilitates healthy behaviors. Self-awareness of values, identity, and adaptive behaviors provide one with numerous protective factors against stressful events. Consequently, presence of meaning reliably predicts higher psychosocial functioning and adaptive coping mechanisms. In more recent years, Steger and colleagues (Dursun, Steger, Bentele, & Schulenberg, 2016) have found that perceived social support and search for meaning predict posttraumatic growth outcomes, thus both social support

and search for meaning can support not only resilience following adversity such as the Colorado Floods studied in the researchers' sample, but growth and perceiving one's life is better now than before the adversity.

Meaning in life has also been associated with adaptive outcomes within the health psychology field as well. More specifically, perceived meaning in life has been found to increase immune system response in men with HIV (Bower, Kemeny, Taylor, & Fahey, 2003; Trevino et al., 2010). In a longitudinal study by Trevino and colleagues (2010), the researchers found that patients with HIV/AIDS who used positive religious coping (e.g., seeking spiritual support) as a source of meaning were more likely to report positive health and health-related quality of life. Thus, if a person derives meaning in life from their religion or spirituality and they use religious coping, they are more likely to report experiencing better health and health related quality in life. Overall, religiousness correlates highly with meaning in life as religion provides a framework to create meaning. Similarly, Park (2013) theorized that spirituality is one variable that affects one's global meaning, that is, the overall framework one uses to conceptualize his or her life meaning. Although religion is not the only framework to facilitate meaning in life, it is one that many people utilize (Emmons, 1999) and researchers have studied extensively.

Meaning in life and spiritual support have also been associated with adaptive outcomes in patients with cancer. Winger, Adams, and Mosher (2016) found that in 62 studies of meaning in life and cancer patients, where meaning was frequently measured using the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being, higher levels of meaning in life were significantly related to lower distress related to one's diagnosis and health treatment. Using Park's (2010a, 2010b) Meaning Making Model, which will be discussed in depth below, Winger and colleagues posited that cancer patients who were able to use meaning-making efforts

effectively were more likely to report a greater sense of coherence and lower distress as they effectively made sense of their diagnosis and medical treatment.

Additionally, Breitbart and colleagues (2010) created a group intervention, Meaning-Centered Group Psychotherapy for cancer patients, which incorporates perception of meaning in life and spiritual well-being. During the seven-session psychotherapy groups, patients discuss topics such as what they found meaningful before and after their cancer diagnosis, what is a meaningful death, and what tasks moving forward they could use to find purpose (Breitbart & Poppito, 2014). Those who attended Meaning-Centered Group Psychotherapy, as opposed to supportive group psychotherapy, experienced enhanced spiritual well-being and perceived presence of meaning in life (Breitbart et al., 2010). Moreover, the patients within the Meaning-Centered Psychotherapy condition experienced greater treatment effects (e.g., elevated spiritual well-being, more hope, and less hospital-related anxiety and depression); which persisted when assessed two months after the group ended. Subsequently, meaning in life supports a range of positive health outcomes, highlighting the importance of this variable.

Overall, the growing body of literature demonstrates that meaning in life is an important predictor of various psychological and physical health outcomes (Bower et al., 2003; Breitbart & Poppito, 2014; Breitbart et al., 2010; Florez et al., 2018; Schulenberg et al., 2008; Trevino et al., 2010; Winger et al., 2016). The literature paints a compelling story that the perception of meaning in life is important; however, various conceptualizations, definitions, and measures have created challenges within this area of research. Overall, a lack of consistency in the research of meaning in life creates difficulties comparing findings across studies. The next section provides an overview of meaning in life and these associated issues.

Meaning in Life: Definitions, Conceptualizations, and Measurement

In general, definitions, conceptualizations, and measurement of meaning vary depending upon which meaning in life paradigm a researcher is using. From an existential perspective, meaning is directly tied to coherence and purpose. More specifically, measures like the Purpose in Life test (PIL; Crumbaugh & Maholick, 1964, 1969) assess existential meaning whereby existential meaning is defined as the ability to create a sense of coherence in various life events (Reker, 2000). The PIL and the Purpose in Life test-Short Form (PIL-SF; Schulenberg, Schnetzer, & Buchanan, 2011) measure perceived meaning and life purpose using a logotherapy framework, one which emphasizes perceived meaning and purpose as being essential to physical and psychological well-being (e.g., Frankl, 1986, 1988; Schulenberg et al., 2008). The general content of the measure includes perception of life goals, meaningfulness, goal completion, and life purpose (Schulenberg et al., 2011; Schulenberg, Smith, Drescher, & Buchanan, 2016).

Reker and Wong (1988) and Morgan and Farsides (2009) similarly conceptualize that meaning in life involves coherence and purpose in life goals, goal attainment, and goal accomplishment (Reker, 2000). However, instead of using the measures above, Reker (1992, 2000) created a subjective sense of meaning in life measure, the Life Attitude Profile Revised, which measures meaning through two subscales: purpose and coherence. Similarly, Morgan and Farsides (2009) created the Meaningful Life Measure, which assesses the facets of exciting life, accomplished life, principled life, purposeful life, and valued life. To create the Meaningful Life Measure, Morgan and Farsides administered the Purpose in Life test (Crumbaugh & Maholick, 1969), the Life Regard Index (Battista & Almond, 1973), and the Ryff Scales of Psychological Well-Being's facet of Purpose in Life (Ryff, 1989) to participants to distinguish what items were useful in assessing meaning in life using principal-axis factor analysis and then confirmatory factor-analytic methods. Although Reker (1992) and Morgan and Farsides (2009) measure

meaning in life differently, they do agree that core components of meaning in life are coherence and purpose and that these variables are vital in defining the construct (Reker, 2000).

In Park and George's (2013) literature review of meaning in life research, the authors indicated that there is ambiguity within the literature as some researchers interchangeably use meaning, purpose, coherence, and significance while others argue these are different constructs, which require different definitions and instrumentation. Consequently, an important discussion within the meaning in life literature is whether meaning in life involves facets such as coherence, purpose, and significance, whether meaning in life can be used interchangeably with these terms, or if meaning in life is separate from these constructs. These related terms are often used interchangeably across research studies, depending on the researcher, which ultimately complicates the literature (Martela & Steger, 2016).

Heintzelman and King (2014a, 2014b) theorized that coherence, purpose, and significance are distinct variables from meaning in life and should not be used interchangeably. Accordingly, Heintzelman and King argued that most definitions of meaning in life are not effective and that researchers should move away from blurring coherence, purpose, significance, and meaning. As a rebuttal to this argument, Martela and Steger (2016) asserted that coherence, purpose, and significance are all aspects of the human experience and that these approaches facilitate one's discovery of meaning in life. Moreover, these variables allow a person to create a comprehensible framework about life (coherence), with purpose lending itself to valued actions and behaviors that a person finds significant. Therefore, coherence, purpose, and significance involve having a sense of what is valued in the world, in life events, and in behaviors which all, in turn, facilitate searching for the perception of meaning in life.

Steger, Shin, Shim, and Fitch-Martin (2013) defined meaning in life as the:

> degree to which people have achieved comprehension (through making sense of their lives and experience, developing a coherent mental model of their selves, the world around them, and their fit and interactions with the world) and have achieved purpose (through discerning, committing to, and pursuing overarching lifelong goals, aims, and aspirations; p. 166).

Steger and colleagues thus emphasize that meaning involves components of coherence, purpose, and significance. Steger also expanded on the work of Frankl and Crumbaugh by furthering the researchers' study of search and presence of meaning in life (Crumbaugh, 1977; Frankl, 1988; Steger & Frazier, 2005; Steger et al., 2006) and created the Meaning in Life Questionnaire (MLQ) to measure meaning in life using this conceptualization. Steger's interpretation of meaning in life is a mental process and not motivational in nature (Steger, 2018). According to Steger, people strive to understand life events, as it is advantageous for safety and ultimately survival. Consequently, people use meaning in life as a mental process to make sense of how people understand themselves, other people, and the world. The relationship between how people view themselves, other people, and the world creates "meaning systems" (p. 4) which in turn influence goals and accomplishing these goals in turn facilitates a sense of purpose.

In other conceptualizations of meaning in life, researchers have instead theorized that the construct involves three different structural components: cognitive, behavioral, and emotional (Baumeister, 1991; Reker & Wong, 1988, 2012). One perspective indicates that people attribute meaning to life events and connect this meaning across subsequent events (cognitively; Baumeister, 1991). Under this same theory, an individual can behave in a way that is in line with values (behaviorally) and thus be motivated to accomplish goals and tasks that he or she ascribes meaning (emotionally). In contrast, Reker and Wong (1988, 2012) theorized that personal

meaning is comprised of cognitive, motivational, and affective components. Within this framework, one creates meaning by attempting to understand an event (cognitive), to pursue valued goals (motivational), and to achieve life satisfaction (affective). Both theories view meaning in life in cognitive, behavioral/motivational, emotional/affective manners. However, even though these models fundamentally echo one another in that they both emphasize that meaning requires thinking about an experience, motivation towards valued behavior, exploration of these behaviors, and satisfaction with meaning attainment, they are viewed as separate meaning in life frameworks.

More recently, Zhang, Sang, Chen, Zhu, and Deng (2018) posited that although meaning in life has been widely studied, researchers have not conceptualized or measured four specific dimensions of meaning in life. Zhang and colleagues assert that these four dimensions include need for meaning, meaning confusion, meaning avoidance, and meaning anxiety. The researchers posited these dimensions exist based on theories by Frankl (1959/2006) and Schlegel and Hicks (2017). More specifically, Frankl (1959/2006) posited that everyone has an innate will to find meaning, no matter the context. Consequently, when coping with potentially traumatic events to daily stressors, people will want to find meaning in their lives. Schlegel and Hicks (2017) took Frankl's theory that this innate will to discover meaning in life varies based on the person. According to Schlegel and Hicks (2017), most meaning in life measures do not examine "individual differences in need for meaning" (p. 29). The researchers theorized that some people are not concerned with finding meaning in life or have never thought about if their lives have meaning. Consequently, when these individuals are asked if their life has meaning, they may be confused by the question and unsure how to respond. The researchers theorized there is a need to capture this meaning in life ambiguity or uncertainty rather than just the presence or absence of

perceived presence or search for meaning in life. The researchers indicated that by examining these individual differences, clinicians and researchers may be able to examine when finding meaning in life may be most important, not only following potential traumatic events but also in the context of daily stressors.

Individual differences in finding and perceiving meaning are directly linked to the Meaning Making Model. The Meaning Making Model (Park, 2010a, 2010b), which was introduced in the previous section, is a theoretical framework for understanding how people create meaning in life. The Meaning Making Model identifies two forms of meaning in life: global and situational. According to Park, global meaning is a "general orienting system" that can be created by experiencing a variety of situations whereas situational meaning is specific to a particular event (Pargament, 1997; Park, 2010a, p. 258). Frankl (1959/2006) theorized this same general coherence of one's world, but rather than calling it global meaning, referred to the concept as ultimate meaning. A global belief broadly contains ideas about justice, control, predictability, coherence, and how a person views the world and themselves more broadly (Janoff-Bulman, 1992). Accordingly, global meaning affects how one copes with a crisis or illness (Park, 2013) and is the schema people create and use to understand various life experiences (Janoff-Bulman & Frantz, 1997; Mischel & Morf, 2003; Park, 2010b). While global meaning is a larger perspective of one's worldview and view of his or her life, situational meaning refers to a specific situation (Park, 2010a). Situational meaning involves an explicit event and the initial appraisal of the event. When people experience a stressor or an occurrence that violates how they view the world or themselves, they try to make sense of the situation and find meaning in the event.

Park created the Meaning Making Model to be discrepancy-based (Park, 2010a). When there is a discrepancy between an appraised situational meaning and a person's global meaning, the person is likely to experience or endorse distress due to this discrepancy. This distress consequently makes the person want to decrease this discrepancy, and in doing so, reduce his or her suffering (Park, 2013). One way to decrease this discrepancy, and thus distress, is to have individuals use problem-focused and emotion-focused coping strategies (Aldwin, 2007). Another way is to create meaning, using Park's (2010b) framework, is to change how one appraises the event and/or assimilates or changes the situation to one's global beliefs. For example, if an individual's global meaning in life involved worshipping a benevolent God that protects them from harm and they experience a natural disaster, their global meaning framework would be disrupted. They may believe their God should not have let the event happen (Park, 2016; Spilka, Hood, Hunsberger, & Gorsuch, 2003). However, if the event is reframed and they come to believe the experience was part of God's larger plan, they will successfully assimilate the experience with the natural disaster to their larger global meaning in life. By creating less of a discrepancy between the specific and global frameworks, they may experience less distress following the natural disaster.

Overall, researchers such as Heintzelman and King (2014a, 2014b; Martela & Steger, 2016) have asserted that meaning in life, as a concept, is poorly defined. Definitions of meaning tend to differ from study to study and no theoretical propositions of meaning in life have been confirmed, as most theoretical models for meaning making are either too abstract or complex to test (Park, 2010a). Several theories of meaning in life were discussed at length above, demonstrating that researchers disagree with regard to how best to characterize meaning in life.

A major source of disparity is what facets comprise meaning in life and whether meaning in life can be used interchangeably with concepts such as purpose, coherence, and significance.

Moreover, methodological limitations and the lack of a standard model of meaning in life hinder definitive research on the concept (Park & George, 2013). There is no universally accepted definition or measurement for meaning in life and researchers have created measures to assess their specific operational definitions. As noted above Reker (1992), Morgan and Farsides (2009), and Steger and colleagues (2006) created specific meaning in life operational definitions and, in turn, created measures to assess these specific forms of meaning in life. However, these researchers are only a few among many who have, in various ways, refined how meaning is operationalized and measured (Park & George, 2013). Adding to the confusion and ambiguity, almost 60 differing measures of subjective sense of meaning, using divergent theories of meaning in life, have been created and used in research (Brandstätter, Baumann, Borasio, & Fegg, 2012; Park & George, 2013). Moreover, research has supported that various meaning in life measures are highly related. With regards to correlations amongst meaning in life measures, the Meaning in Life Questionnaire—Presence Scale (MLQ-P) is significantly and positively correlated with the PIL (r = .61-.64, p < .01; Schulenberg et al., 2011; Steger et al., 2006), the PIL-SF (r = .64, p < .01; Schulenberg et al., 2011), and the Life Regard Index (r = .66, p < .05; Steger et al., 2006).

Consequently, within the literature, different conceptualizations of meaning in life exist, which creates significant challenges in comparing findings amongst studies, obfuscating a comprehensive field of study of the concept. Moreover, this lack of consistency in turn makes it difficult to compare meaning in life to other, conceptually related variables, such as resilience.

An Introduction to Resilience

Initially, resilience was constructed as a characteristic of at-risk children who were "invulnerable" (Garmezy, 1974; Masten, 2001; Pines, 1975; Werner, 1984; Wong & Wong, 2012). During the 1970s to 1990s, researchers primarily examined resilience in children who were at risk for developing psychopathology due to environmental and/or genetic factors (e.g., parent history of substance abuse and/or mental illness), but who did not subsequently develop psychopathology (Masten, 2001; Rutter, 1979; Werner, 1984). Overall, researchers found that even when exposed to significant environmental stressors, many children were resilient and were able to function adaptively in adulthood as a result of experiencing various hardships at a young age. Although research on resilience began as a way to understand adjustment to chronic adversity in children (Garmezy, 1993; Masten, 2001; Rutter, 1987; Werner, 1984; Wong & Wong, 2012), efforts by researchers over the years have expanded the scope of resilience research to outcomes of potentially traumatic events (Aiena et al., 2016; Bonanno & Diminich, 2013; Weathers et al., 2016).

One of the most succinct definitions of resilience is the ability to recover from stress (Agnes, 2005; Cosco et al., 2017). Using this definition of resilience, the only two universally acknowledged components of resilience are adversity and positive adaptation. However, diverse operational definitions and assessments exist to measure resilience (e.g., Cosco et al., 2017; Davydov et al., 2010; Hu et al., 2015; Fletcher & Sarkar, 2013; Tsai, Jones, Pietrzak, Harpaz-Rotem, & Southwick, 2018; Windle et al., 2011). Consequently, researchers within the field of resilience have a wide array of operational definitions and measurement tools to assess resilience and no gold standard exists (Averill, Averill, Kelmendi, Abdallah, & Southwick, 2018).

Researchers have found that resilience predicts overall levels of self-reported well-being, positive affect, optimism, self-esteem and gratitude (Arnetz et al., 2013; Fredrickson, Tugade, Waugh, & Larkin, 2003; Tugade & Fredrickson, 2004; Weathers et al., 2016). Additionally, researchers have demonstrated that resilience is related to decreased self-reports of posttraumatic stress, general psychological distress, and generalized anxiety (Nishi, Uehara, Kondo, & Matsuoka, 2010; Scali et al., 2012; Weathers et al., 2016). Along these lines, resilience has been supported to moderate stress, anxiety, and depressive symptoms (Aroian & Norris, 2000; Gloria & Steinhardt, 2016; Pinquart, 2009; Wagnild, 2003; Wingo et al., 2010).

In a more recent study of Iraq and Afghanistan Veterans, resilience was found to significantly moderate the relationship between combat exposure and PTSD severity (Blackburn & Owens, 2016). More specifically, resilience served as a buffer between combat exposure and PTSD symptoms. Thus, those who reported higher levels of pre-deployment resilience were less vulnerable to severe PTSD symptoms across various combat exposure levels. From these findings, Blackburn and Owens indicated that bolstering resilience factors in Veterans and active duty military members could safeguard against severe PTSD symptoms in these individuals.

As resilience is consistently, negatively associated with maladaptive outcomes such as PTSD following military service, programs such as the US Army Resilience Trainer course, which teaches resilience to Army personnel, have been created throughout the years (Reivich, Seligman, & McBride, 2011). This particular training includes four modules and two maintenance sessions, which takes place over a 10-day period. The first module involves the participants learning what contributes to resilience with emphasis placed on the role of self-awareness, self-regulation, optimism, mental agility, character strengths, and social connection. In the second module, participants work on bolstering a series of skills to increase resilience by

learning how to problem solve, minimize catastrophic thinking, and examine how thoughts and behaviors can impact one another. In the third module, participants conduct work on identifying character strengths and examine how these strengths can be useful in times of adversity. In the fourth module, participants conduct work based on strengthening relationships and bolstering social support. Lastly, two days are spent on maintenance of the modules and how these skills can be applied in military-specific environments.

In general, various definitions exist for resilience and depending on what theory a researcher ascribes to, they will conceptualize and measure resilience differently (e.g., Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Hu et al., 2015; Karairmak, 2010; Karreman & Vingerhoets, 2012; Liu, Wang, & Li, 2012). Although the literature demonstrates the importance of resilience as a protective factor, conceptualization, definitions, and measures of resilience vary study by study. Essentially, without consistent conceptualizations, it becomes difficult for researchers to interpret and compare resilience findings and to know what future studies should be conducted (Davydov et al., 2010; Hu et al., 2015; Fletcher & Sarkar, 2013).

Resilience: Definitions, Conceptualizations, and Measurement

Part of the ambiguity within the definitions and conceptualizations of resilience revolves around three paradigms within the literature. More specifically, some researchers define resilience as either a trait, outcome, or process (Hu et al., 2015). When viewed as a personality trait people possess, resilience is seen as a quality that allows people to adapt to an adverse event (Connor & Davidson, 2003; Hu et al., 2015; Ong, Bergeman, Bisconti, & Wallace, 2006). When viewed as an outcome, resilience is conceptualized as an aftereffect of a trauma or potentially traumatic event (Hu et al., 2015; Masten, 2001). Accordingly, one is resilient when he or she is able to recover following an event. Finally, when resilience is viewed as a process, resilience is

viewed as a dynamic progression one may experience following an adverse event (Fergus & Zimmerman, 2005; Hu et al., 2015; Luthar, Cicchetti, & Becker, 2000).

According to Southwick and colleagues, it is important when defining resilience to specify if resilience is being viewed as a trait, a process, or an outcome rather than viewing resilience as binary, something that is present or absent (Southwick, Bonanno, Masten, Panter-Brick, & Yehuda, 2014). Southwick and colleagues theorized that resilience should be viewed on a continuum and can vary across various life domains (Pietrzak & Southwick, 2011; Tsai et al., 2018). Thus a person may be resilient in the face of work stressors and thus report higher resilience with regards to work life, but may perceive less resilience in the psychosocial area of their life. Southwick and Charney (2018) theorized that people can bolster resilience in various life domains if they develop or utilize coping mechanisms otherwise known as "resilience factors." These factors include, but are not limited to, a person realistically and optimistically facing their fear, using their moral compass, possessing religion/spirituality, having resilient role models in their lives, having social support, partaking in brain and physical fitness, practicing cognitive and emotional flexibility, and perceiving their lives having meaning and purpose. Possessing any of these factors can in turn allow one to overcome a stressor or bolster resilience in a given area of life. Overall, Southwick and colleagues ascribe to the notion that resilient individuals are able to harness internal and environmental resources that allow them to maintain a sense of well-being, even under conditions of severe stress (Southwick et al., 2014; Southwick & Charney, 2012, 2018).

To amend some of the ambiguity within the literature, Bonanno, Romero, and Klein (2015) argued that resilience should be viewed as an "umbrella" term. According to these researchers, due to the popularity of resilience, the term has taken several, frequently overlapping

operational definitions. Due to this ambiguity, when resilience is used as a label it lacks sufficient precision. For the concept to have scientific utility, Bonanno and colleagues argued the term must encompass various elements. Bonanno and colleagues posited that to create a better framework for research and theory on resilience, researchers should reference and measure four time points (pre-adversity functioning, during adversity functioning, post-adversity outcomes, and predictors of resilient outcomes) in their work. Accordingly, to measure resilience, researchers should strive to collect and assess data before, during, and after a potentially traumatic event. Even though the majority of the population will experience some form of trauma, due to the unpredictable nature of traumatic events, few researchers collect baseline data before a specific adverse event occurs, and thus, this mode of resilience measurement may be more difficult to collect compared to self-report data collected after a traumatic event.

During a panel discussion at the 2013 meeting of the International Society for Traumatic Stress Studies (Southwick et al., 2014), various prolific and well-regarded researchers, including Bonanno and Southwick, discussed diverse ways of defining resilience. Rachel Yehuda, who was on the panel, approaches resilience research from a neuroscience perspective. Yehuda argues that observing individual differences in biological and behavioral responses before, during, and after stressful events would fortify the study of resilience (Yehuda, Flory, Southwick, & Charney, 2006). Yehuda and colleagues asserted that collecting biological information such as brain region functioning and neuroendocrine markers will strengthen this area of research by providing researchers less subjective ways to observe and understand resilience. Ultimately, this form of research may lead to biologically based operational definitions and measures of resilience. From biologically based resilience studies, researchers have found associations between resilience and certain hormones, neuropeptides, neurotransmitters, and neural circuits.

In Osório, Probert, Jones, Young, and Robbins' review (2018), the researchers outlined the literature and findings that have linked neurochemical, genetic, and epigenetic processes to resilience outcomes. However, the researchers noted that although neurobiological processes and the psychological symptoms of stress or resilience have been supported to exist with each other, researchers do not know if there is a causal relationship. Consequently, the researchers posited that more research is needed to better understand these relationships.

Another important component of Yehuda's discussion on the panel entailed whether or not resilience and psychopathology can coexist. Yehuda theorized that resilience can co-occur with mental disorders such as posttraumatic stress disorder (PTSD; Southwick et al., 2014; Yehuda & Flory, 2007). Further, Yehuda asserted a key component of resilience is the individual's motivation to move forward (Southwick et al., 2014). Consequently, if a person develops PTSD or some other form of psychopathology following an adverse event, but they want to move forward, they can be considered resilient. Yehuda's theory of resilience is in opposition to Bonanno and colleagues, as they posit that resilient people do not develop psychological disorders as a consequence to the trauma (Southwick et al., 2014).

Bonanno (2004) theorized that individuals who are resilient do not go on to develop disorders such as PTSD. According to Bonanno, resilience is the "ability to maintain relatively stable, healthy levels of psychological and physical functioning" (p. 20) following a potentially traumatic event. Resilient individuals may experience negative reactions to an adverse or potentially traumatic event and may experience a range of reactions such as intrusive memories or have negative thoughts about the experience (Bonanno & Mancini, 2012). However, resilient individuals continue to function at "normal" or routine levels due to their ability to rebound following the event, even while experiencing negative reactions. According to Bonanno,

Westphal, and Mancini (2011), there are four prototypical patterns of disruption following a potentially traumatic event including chronic, delayed, recovery, and resilient. The resilience pathway involves less significant distress following a potentially traumatic event, and around 35-65% of people who experience a traumatic event follow this trajectory.

Masten, who was also on the 2013 panel of the International Society for Traumatic Stress Studies, differs in her operational definition and study of resilience from Southwick, Yehuda, and Bonanno (Southwick et al., 2014). According to Masten, resilience is one's capacity to adapt to stressors that threaten development, functioning, and viability in an unstable environment (Masten, 2014a, 2014b; Southwick et al., 2014). As Masten is a developmental psychologist, it makes sense that she would conceptualize resilience within a human development framework. Masten reported that her definition of resilience allows for the concept to be studied in various contexts and theorized that the best way to study resilience is to take a person-focused approach. More specifically, to observe resilience empirically, researchers should conduct single case studies (Masten & O'Connor, 1989) or create comparison studies between two groups (Masten, 2001). Masten (2001) acknowledged that these techniques are limited with regard to generalizability; however, the information gained on individual and group differences could allow researchers to better understand nuances of resilience.

In a somewhat similar vein, Panter-Brick, who also sat on the 2013 panel, reported that research on resilience is not tapping into key individual differences in how resilience can be defined, expressed, and measured (Southwick et al., 2014). Accordingly, Panter-Brick defined resilience as the process of harnessing culturally specific resources and sustaining well-being. Thus, resilience is not viewed as an attribute or capacity, but rather a process. Moreover, Panter-Brick intentionally remains vague in her operational definition to allow researchers opportunities

to identify various resources that may be relevant to individuals or communities, no matter the context. As Panter-Brick is an anthropologist, her conceptualization of resilience and how it could be studied within different cultural contexts is in line with her primary area of study.

According to Panter-Brick, within resilience research there are certain "deadly sins" most researchers practice (Southwick et al., 2014, p. 4). These flaws include using conceptually hazy definitions in discussing resilience across different contexts, limiting the contexts researchers study resilience, and being insensitive to non-Western cultural goals and resources (Panter-Brick & Leckman, 2013). Panter-Brick indicated that the field of resilience would benefit from the use of mixed-methodological studies, such as the methodology used by Miller and colleagues (2006), to ameliorate operational definition and measurement flaws. Miller and colleagues (2006) specifically assessed how individuals in Kabul, Afghanistan define well-being and distress. Panter-Brick (2014) indicated that a strength of their study was that they collected narratives from groups within communities of Kabul, discovered themes within the narratives, and created questions based off of these themes to assess well-being and distress rather than arbitrarily creating questions to assess well-being (Miller et al., 2006). Panter-Brick (2014) asserted that applying this methodology to resilience would create more valid, reliable, and culturally sensitive measures of the construct.

Like Panter-Brick, Ungar (2006, 2008; Southwick et al., 2014) also reported that resilience research would benefit from incorporating ecological and cultural factors. Ungar theorized that resilience is one's capacity to access and use resources (e.g., material resources, health care resources, supportive relationships, and adherence to cultural traditions) to cope with adverse events. Ungar (2008) emphasized that resources vary depending on a person's culture, financial means, access to healthcare and mental healthcare providers, and social support.

Consequently, researchers who use self-report measures that do not translate into different cultural contexts may miss crucial information. As a result of Ungar's conceptualization of resilience, Ungar and colleagues (2008) developed the Child and Youth Resilience Measure in 11 different languages to create a culturally and contextually sensitive measure of resilience.

As discussed above, researchers have used different approaches to measure the same construct, which may not be the same concept at all. These different approaches to defining and measuring resilience have subsequently created inconsistencies within the literature (Haskett, Nears, Ward, & McPherson, 2006; Luthar et al., 2000; Windle et al., 2011). Historically, the field of resilience has lacked empirically sound measures due to the amount of diverse conceptualizations of resilience and because various researchers used qualitative rather than quantitative means to assess resilience (Tusaie & Dyer, 2004). This lack of scientific clarity has created issues with generalizability. For example, Vanderbilt-Adriance and Shaw (2008; Windle et al., 2011) found that prevalence rates of resilience fluctuated from 25-84% depending on the study. This wide margin raises questions as to what extent researchers are observing resilience versus another variable (Windle et al., 2011) or if this construct varies dramatically by context. As research within the field of resilience has continued to evolve, more consistent quantitative means of defining and measuring resilience are needed (Aburn, Gott, & Hoare, 2016; Tusaie & Dyer, 2004).

Overall, no one resilience measure is universally adopted or preferred (Aburn et al., 2016; Averill et al., 2018; Connor & Davidson, 2003; Windle et al., 2011). As a result, researchers have little evidence to inform what measure of resilience is the most contextually appropriate (Windle et al., 2011). In Windle and colleagues' (2011) psychometric and methodological review of 15 self-report resilience scales, they found that measures such as the Connor-Davidson

Resilience Scale CD-RISC (Connor & Davidson, 2003), the Resilience Scale for Adults (RSA; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003), the 14-Item Resilience Scale (RS-14; Wagnild, 2009a), and the Brief Resilience Scale (BRS; Smith et al., 2008) were of moderate quality for measuring resilience within adult populations.

The CD-RISC (Connor & Davidson, 2003; Windle et al., 2011) assesses stress coping facets including personal competence, strengthening effects of stress, acceptance of change, control, and spiritual influences. The measure borrows heavily from the work of Kobasa (1979a) and thus uses the three facets of hardiness as its foundation for assessing stress coping. In contrast, the RSA (Friborg et al., 2003; Windle et al., 2011) assesses protective resources such as personal strength, family cohesion, and social resources; which the researchers theorize promote recovery following adversity. Wagnild (2009a; Weathers et al., 2016) also created self-report measures to assess characteristics that promote resilience. However, Wagnild theorized that the core facets of resilience are perseverance, equanimity, meaningfulness, self-reliance, and existential aloneness. Wagnild developed the Resilience Scale and RS-14 to measure her five facet operational definition of resilience. According to Wagnild, these five characteristics facilitate resilience, but meaning is the most important facet as it can fortify the other four facets (Aiena et al., 2016; Wagnild, 2009a; Weathers et al., 2016).

Unlike the CD-RISC, RSA, and RS-14, the BRS (Smith et al., 2008; Windle et al., 2011) does not focus on assessing protective factors or individual resources that may buffer maladaptive functioning following an adverse event. Instead, the BRS assesses whether a person perceives that they can bounce back following a stressful event and how long it took to recover after a stressor. Smith and colleagues (2008) indicated they used Ahern, Kiehl, Sole, and Byers' (2006) review of resilience measures in developing the BRS. In Ahern and colleagues' review,

the authors indicated that although there are several resilience measures used within the field of resilience research, most concentrate on measuring protective factors and coping resources rather than if one is able to return to typical functioning following a stressor (Smith et al., 2008). The BRS specifically attempts to bridge the measurement gap within the literature by measuring "bouncing back" from a stressor rather than assessing protective factors that promote resilience. Although the BRS (Smith et al., 2008) measures bouncing back, rather than factors that promote resilience, the measure is significantly and positively correlated with other resilience measures such as the CD-RISC ($r = .59$, $p < .01$) and the Ego Resiliency Scale ($r = .51$, $p < .01$; Block & Kremen, 1996).

In sum, there are several, frequently overlapping operational definitions of resilience (Bonanno et al., 2015; Southwick et al., 2014). Even prolific, well-regarded researchers within the field of mental health ascribe to different ways of defining and measuring resilience (Southwick et al., 2014). These diverse means of defining and measuring resilience have in turn led to inconsistencies within the literature (Haskett et al., 2006; Luthar et al., 2000; Windle et al., 2011). Essentially, definitions, conceptualizations, and measurements of resilience are difficult to integrate as they vary depending on the paradigm of resilience being utilized (e.g., Davydov et al., 2010; Hu et al., 2015; Fletcher & Sarkar, 2013). This variability creates a challenge in synthesizing and comparing studies within the resilience literature and across studies examining resilience to other positive psychological constructs. More specifically, this variability creates difficulty with comparing resilience to the constructs of meaning in life and hardiness. As the role of psychological research is to refine and become more precise with how researchers define and measure psychological constructs, these inconsistencies impede this process. As meaning in

life and resilience have been detailed above, the following section introduces and discusses the concept of hardiness.

An Introduction to Hardiness

As with meaning in life and resilience, definitions, conceptualizations, and measurement of hardiness depend on the hardiness paradigm a researcher uses. For example, existential psychologists emphasize that hardiness is involved in the unique processes that foster searching for meaning in life (e.g., Binswanger, 1963; Frankl, 1959/2006; Kierkegaard, 1954; Maddi, 1970, 2004, 2013; May, 1950; Sartre, 1956). From this perspective, hardiness is an existential construct, which emphasizes that people strive to find meaning in their lives and this meaning is subjective to that individual. Hardiness was a construct that was used as a way to operationally define existential courage (Maddi, 2004). Essentially, when searching for meaning in life, one must look to the future. When one does not have courage to look toward the future, he or she may become stagnant and unsure what path to take next. This lack of courage and the experience of uncertainty may influence the person to stop searching for meaning. However, when one demonstrates hardiness, one has the courage to search for meaning in life and move forward, even during adverse events or following a major stressor.

According to Maddi (1970, 2013) meaning in life or purpose is a resource that can facilitate motivation. A hardy individual is motivated and committed to finding purpose in life and this purpose-driven outlook in turn facilitates growth from life stressors (Maddi, 2002). Hardy individuals typically report a commitment to a purpose in life and experience growth following a potentially traumatic event as these individuals minimize the stress of their situation and appraise the potentially traumatic situation in a way that makes the event appear less

harmful, more meaningful, and something that can facilitate self-growth (Kobasa, Maddi, & Kahn, 1982).

Averill (1973) was one of the first researchers to set the foundation for the study of hardiness. Averill proposed that there is a difference between people who are able to maintain their health during a stressor while others in the same stressful environment are not able to maintain their health. According to Averill, people who can maintain their health in the face of stress possess decisional control, cognitive control, and coping skills. Decisional control is the ability to identify and choose various ways to respond to stress whereas cognitive control is the ability to appraise stressful events in a healthier, more rational manner. Coping skills involve the ability to identify and use personal attitudes and behaviors that facilitate successful handling of stress.

Kobasa and Maddi used Averill's framework for her control component of hardiness. According to Kobasa, hardiness is comprised of three core facets or attitudes: commitment, control, and challenge (Kobasa, 1979b; Maddi, 2013; Maddi & Kobasa, 1984). For a person to be hardy, he or she must have all three facets or attitudes (Maddi, 2002). The three attitudes are known as the three C's of hardiness and allow a person to grow from a stressful or traumatic situation. Like Averill, Kobasa's (1979a) early research on the relationship between illness and stress inspired her study of hardiness. Kobasa found that, in general, stress and illness are positively related; however, not all who endorse stress become ill. Kobasa believed that hardiness could be the mediating factor that allowed some to remain well when experiencing stress. Kobasa (1979b) found that those who scored higher on hardiness were less likely to become ill as compared to those who endorsed lower hardiness scores. From the work of Kobasa along with others, it has been supported that hardiness is a mediator of both physical and mental

illness (Funk, 1992; Kobasa, 1979a, 1979b, 1982; Kobasa, Maddi, & Courington, 1981; Kobasa & Puccetti, 1983; Schellenberg, 2005; Wiebe & McCallum, 1986).

Maddi (2013), a prominent figure within the study of hardiness, began studying hardiness when he became interested in investigating a 1974 *Family Circle* article, which stated that stress could "kill you" (p. 7). From 1975 to 1987, Maddi and his team measured variables in those employed at the Illinois Bell Telephone Company before and after the government deregulation that occurred between 1981 and 1982, a process that led to 50% of employees being fired. Maddi and his researchers examined stress, strain, motivation, and the three C's of hardiness in participants. Maddi and Kobasa (1984) found that some of the sample reported adverse physiological and psychological reactions following the deregulation. Physical conditions experienced by some employees included heart attack, stroke, kidney failure, and cancer. Psychologically, some reported depression, anxiety, excessive spending, divorces, suicide, and dependency on alcohol or drugs. However, some people in the sample were resilient, independent of whether they stayed on at the company or were fired. Those who stayed on (i.e., were not fired) at the company showed more enthusiasm, fulfillment, and motivation following the major business changes versus before. Likewise, those who were fired reported enthusiasm at starting over and were motivated and fulfilled to engage in a different career role.

Overall, there is more research on the relationship between hardiness and physical health as compared to psychological distress. More recently, Bartone, Valdes, and Sandvik (2016) explored how hardiness predicts such health outcomes as cardiovascular health, cholesterol levels, and body fat. The researchers found that hardiness predicts high-density lipoprotein, which has been associated with lowered chances of experiencing coronary heart disease. Those who endorsed higher levels of hardiness within the study also reported lower body mass index

scores and thus hardiness scores predicted less body fat. The researchers theorized that because hardiness serves as a protective factor against maladaptive outcomes related to stress, hardy individuals are more likely to practice proactive, pro-health behaviors such as exercising and eating a healthy diet, all of which impact cholesterol levels, cardiovascular health, and body fat.

Beyond hardiness being associated with positive medical outcomes researchers (e.g., Kosaka, 1996; Lambert, Lambert, Klipple, & Mewshaw, 1990; Maddi & Khoshaba, 1994; Schellenberg, 2005) have also supported that hardiness has a significant effect on mental health as well. For example, Manning, Williams, and Wolfe (1988) found that those who reported higher levels of hardiness also reported higher positive affect, decreased depression, and less stress (Funk, 1992). According to Wiebe (1991), as cited in Funk (1992), undergraduate students who scored higher on hardiness were more likely to experience higher tolerance for frustration, less negative affect, and lower threat appraisal. Banks and Gannon (1988) likewise found that those who endorsed higher levels of hardiness reported less stress and when they did report stress, their perception of the stress was more adaptive as compared to those who reported lower levels of hardiness (Funk, 1992). Hardiness has also been negatively and significantly related to PTSD symptoms, with hardy coping theorized to act as a "resilience factor against symptom development" (Thomassen, Hystad, Johnsen, Johnsen, & Bartone, 2018, p. 147).

Overall, the field of hardiness has grown as a science throughout the years. It is useful and vital to study hardiness as the concept is positively correlated with adaptive psychological and health outcomes (e.g., Bartone et al., 2016; Kosaka, 1996; Lambert et al., 1990; Maddi & Khoshaba, 1994; Schellenberg, 2005). From the literature, it is obvious that hardiness is important. However, when different conceptualizations, definitions, and measures of hardiness exist, it creates problems for this area of research.

Hardiness: Definitions, Conceptualizations, and Measurement

Within the hardiness literature there are different conceptualizations of the construct, which prohibits researchers from being able to cohesively tie the literature together (Bartone, 1991; Herrman et al., 2011; Kobasa, 1979b; Windle et al., 2011). These various operational definitions and measures thus create a lack of consistency and make it difficult to compare findings across studies. These inconsistencies also make it difficult to compare hardiness to other variables such as meaning in life and resilience.

Hardiness is a stress resistance resource (Kobasa & Maddi, 1977). Essentially, when a person is able to practice challenge, control, and commitment, the three facets of hardiness, life may be viewed as an ever-changing process that allows for learning and evolving (Kobasa, 1979b; Maddi, 2013; Maddi & Kobasa, 1984). These three facets of hardiness will be described in greater detail below.

Challenge involves one seeing his or her current stress not as a threat, but as an opportunity to grow and change. According to Moss (1973), as cited in Schellenberg (2005), challenge is a strength in that it allows people to practice cognitive reframing and appraise stress with more objectivity. Additionally, people can view a stressor as something they have control over as the event can be reframed into something that is seen as a rewarding experience (Kobasa, 1979b; Maddi, 2013; Maddi & Kobasa, 1984). Thus, control is the belief that one is not powerless in a given situation. The control facet of hardiness involves searching for meaning and acknowledging how one's actions contribute to overcoming the stressor. Control allows for one to be hopeful, no matter the stress level. Moreover, when one perceives a stressful event as a challenge where some control can be cultivated, he or she is more likely to grow (Kobasa, 1979b; Maddi, 2013; Maddi & Kobasa, 1984).

The third C of hardiness, commitment, allows for the practice of valued activities no matter how stressful the current environment. Commitment is not limited to the individual, but also refers to the environment, how one perceives his or her environment and one's place within that environment. During a stressful situation, one's community, perceived security within the community, and commitment to the community helps one to cope with stress (Antonovsky, 1979; Avery, 2015).

One cannot be hardy and thus practice hardy behaviors such as hardy coping, positive social interaction, and self-care if any of the three components of hardiness are poorly cultivated (Khoshaba & Maddi, 2004; Maddi, 2002, 2013). Consequently, to be hardy, a person needs to cultivate all three hardy facets. To practice hardy coping, one must identify a stressful event and analyze ways to view the experience as an opportunity for growth. Hardy social interaction involves receiving and giving positive social support. Hardy self-care involves protecting one's self from stress by practicing adaptive behaviors such as exercise, healthy eating, and partaking in relaxation techniques. By practicing hardiness in these areas, people may essentially inoculate themselves to the negative impact of an adverse event.

Beyond viewing hardiness as behaviors, Bartone (2012) reported that hardiness is a trait that varies depending on contextual factors. This trait offers protection against the negative effects of stress on health and performance (Avery, 2015; Bartone, 1999; Britt, Adler, & Bartone, 2001). However, Bartone (2006) emphasized that hardiness can be a more global and encompassing concept that is beyond the three facets of commitment, control, and challenge. Bartone argued instead that hardiness is a generalized mode of functioning that allows a person to have a strong future orientation while also affording opportunities to learn from the past. A person who uses hardiness as a generalized mode of functioning is a person who possesses a

hardy-resilient style (Bartone, Ursano, Wright, & Ingraham, 1989). Essentially, a person with a hardy-resilient style is a person who is looking to the future while learning from the past to cope with a stressor, which in turn makes them more resistant to the maladaptive effects of severe stress (e.g., Bartone, 1999). Hardy-resilient individuals tend to be courageous in the face of adversity and disappointments and resilient in responding to potentially traumatic events (Bartone, 2006).

As a result of these varying conceptualizations of hardiness, disparate measures of hardiness exist. In a review of hardiness theory and research, Funk (1992) reported that ambiguity exists within the literature with regard to whether or not hardiness measures could be used interchangeably. Hardiness was initially measured within a business environment using the Personal Views Survey (PVS; Kobasa et al., 1982). The PVS is viewed as a "pure" hardiness measure unlike other hardiness measures as it measures hardiness and not hardy-resilience traits. Early in its development, the PVS received criticism from researchers because the measure had a lack of significant intercorrelations between the three facets of hardiness, specifically when the measure was used outside of the business setting, which in turn invalidated the total hardiness score (Funk & Houston, 1987; Hull, Van Treuren, & Virnelli, 1987; Rhodewalt & Zone, 1989). Thus, on this basis researchers questioned whether hardiness was one-dimensional, or whether all three facets of hardiness were essential aspects to its conceptualization (Avery, 2015; Hull et al., 1987; Tartasky, 1993; Williams, Wiebe, & Smith, 1992). Some researchers theorized that the challenge facet, in particular, could be removed from the conceptualization of hardiness (Hull et al., 1987). To address psychometric critiques of the measure, Maddi (1997) revised the PVS, developing the PVS II-R. From this subsequent work, the PVS II-R yielded sufficient intercorrelations among the three hardiness facets, in school and other non-business related

settings. However, Maddi and colleagues continued to revise the PVS and now the measure is in the third revised edition (PVS III-R; Maddi et al., 2006).

As reported above, Bartone conceptualizes hardiness as a personality trait and thus created a scale to measure his operational definition. Bartone (1989, 1991) created the self-report Dispositional Resilience Scale as a means to assess his conceptualization of hardiness (Windle et al., 2011). Although dispositional resilience includes the term resilience, the measure and term originated from the hardiness literature and can be viewed as a measure of hardiness (Bartone, 1989, 1991, 1995, 2007; Windle et al., 2011). Due to the measure's overlap between hardiness and resilience, some researchers have interchangeably used the terms resilience and hardiness and used this scale to measure resilience. Bartone (2006) in particular interchangeably and synonymously uses the terms hardiness, resilience, dispositional resilience, and hardy-resilient style throughout his work. Bartone proposed that because a hardy lifestyle has been associated with resilience under stress, interchangeably using hardiness, dispositional resilience, resilience, and hardy-resilient style is permissible.

Consequently, another point of imprecision within the field of hardiness involves how hardiness and resilience are related (Bartone, 1991, 2006). Researchers have proposed that more research needs to be conducted to delineate resilience and hardiness as the two concepts overlap greatly (Bartone, 1991; Herrman et al., 2011; Windle et al., 2011). As mentioned above, the CD-RISC (Connor & Davidson, 2003; Windle et al., 2011) assesses stress coping facets with theoretical underpinnings in Kobasa's (1979a) hardiness literature. The self-report measure thus uses the three facets of hardiness as its foundation. However, Connor and Davidson (2003) created the measure to assess resilience. Consequently, even though Connor and Davidson's CD-RISC uses hardiness literature to measure resilience, it is considered a resilience measure.

Subsequently, both the Dispositional Resilience Scale (Bartone, 1989, 1991) and the CD-RISC (Connor & Davidson, 2003) are theoretically based on the hardiness literature, but also measure a form of resilience. These two measures consequently blend hardiness and resilience and create ambiguity with respect to how hardiness and resilience are different and how to measure these constructs. From this ambiguity, it is hard to determine if hardiness and resilience are the same construct or if the two constructs are different and warrant separate study. The relationship between hardiness and resilience is further discussed in the following section, along with the concept of meaning.

On the Relationship Between Meaning in Life, Resilience, and Hardiness

Although construct and measurement flaws exist, researchers continue to conduct work on meaning in life, resilience, and hardiness and the relationship between these variables. For instance, researchers have begun to explore meaning in life as an essential facet that promotes resilience when confronted with a stressful life event (Aiena et al., 2016; Weathers et al., 2016; Wong & Wong, 2012). Within the meaning in life and resilience fields of study, researchers and theorists have been interested in exploring how these variables relate to other protective factors following a potentially traumatic event. From these efforts, significant relationships between meaning in life and resilience have been supported. Wagnild (2009a; Weathers et al., 2016) reported that a core facet of resilience is meaning in life. Moreover, Wong and Wong (2012) indicated that meaning in life can be used as a resource to foster resilience following a potentially traumatic event (Weathers et al., 2016). Similarly, Wagnild (2009a) theorized that resilience is a multifaceted concept comprised of several positive psychological constructs, including meaning in life. Along these lines, Southwick and Charney (2018) theorized that one can bolster resilience using coping mechanisms, or "resilience factors," and the researchers

reported that one of these resilience factors is meaning in life. Wong and Wong consequently reported that resilience is one's ability to use both internal and external factors (e.g., social, educational, and occupational resources) to adaptively cope with an adverse event. Essentially, people who endorse high levels of resilience are more likely to use resources at their disposal, maintaining a sense of well-being even when encountering an adverse or potentially traumatic event (Southwick et al., 2014; Southwick & Charney, 2012, 2018; Weathers et al., 2016; Wong & Wong, 2012).

Wong and Wong (2012) further emphasized the relationship between resilience and meaning in life by theorizing that effective resilience-building efforts should be meaning-centered (Weathers et al., 2016). Wong and Wong reported that the aims of meaning-centered approaches (e.g., development of character strengths, moral strength, compassion for others, supportive social ecologies) facilitate resilience in response to adversity. According to Wong and Wong, by adding meaning to resilience-building activities, people will develop character strengths, compassion for others, and supportive social systems, which in turn facilitates resilience.

Aiena and colleagues (2016) additionally reported that resilience and meaning predict lower posttraumatic stress scores and theorized that meaning in life may be an important way to foster resilience following a potentially traumatic event (in this case, the context was the Deepwater Horizon oil spill). Moreover, Smith and colleagues (2013) found that perceived meaning in life significantly and positively predicts overall resilience when examining a model of resilience. Along these lines, Damon (2008) found that young people are more likely to respond resiliently to adversity when they develop a sense of purpose, which helps them transcend self-interest.

Researchers have also investigated the relationship between meaning in life and resilience measures. More specifically, the PIL-SF significantly and positively correlates with the RS-14 in both a clinical sample that experienced the effects of the Deepwater Horizon oil spill ($r = .67$, $p < .001$; Aiena, Baczwaski, Schulenberg, & Buchanan, 2015) and in a college student sample ($r = .69$, $p < .001$). Moreover, during Smith and colleagues' (2008) development of the BRS, the researchers used the Purpose in Life facet within the Scales of Psychological Well-Being measure (Ryff & Keyes, 1995) to assess the convergent validity of the BRS. The BRS was found to significantly and positively correlate with the Purpose in Life facet in three different samples: in college students ($r = .46$, $p < .01$), cardiac patients ($r = .47$, $p < .01$), and a group of women that included those with fibromyalgia and healthy controls ($r = .67$, $p < .01$).

Essentially, living a meaningful life provides a reason to recover after experiencing stressors (Frankl, 1959/2006; Weathers et al., 2016). Undoubtedly, meaning plays a vital role in a person's capacity to be resilient (Weathers et al., 2016). Consequently, according to Frankl (1959/2006), meaning in life motivates individuals to accomplish life goals and tasks. This theory of meaning in life has directly evolved into the basic conceptualization of hardiness.

Hardiness is an existential construct that emphasizes peoples' need to strive to find meaning in their lives and asserts that this motivation to find meaning allows them to overcome adversity (Maddi, 2004). Moreover, Kobasa (1979b) theorized that at its core, hardiness is a measure of meaning in life. Maddi (2002) furthered this theoretical overlap between hardiness and meaning in life by indicating that hardy individuals are motivated and committed to finding meaning in life and this purpose in turn allows them to grow from life stressors. Essentially, when people perceive they have meaning in life, meaning acts as a buffer against stress (Park & Baumeister, 2017).

Hardiness can also be seen as a pathway to resilience following stress-related experiences (Bartone, 2006; Bonanno, 2004; Maddi, 2013). Maddi (2013) argued that resilience could be the result of one using the three hardiness attitudes and learned coping strategies, which in turn enhance performance and health outcomes. Additionally, Herrman and colleagues (2011) indicated that more research is needed to delineate hardiness and resilience due to the amount of construct overlap. As it stands, it is unclear how these two constructs differ from one another. Likewise, two resilience measures, the CD-RISC (Connor & Davidson, 2003; Windle et al., 2011) and the Dispositional Resilience Scale (Bartone, 1989, 1991; Windle et al., 2011) add to the confusion in the literature as both scales can be used to assess resilience, but are based on the hardiness literature. Moreover, Bartone (2006) has employed terms such as hardiness, dispositional resilience, and resilience interchangeably, further expanding the sphere of confusion in the literature.

Along these lines, Connor and Davidson examined how a measure of hardiness correlates to their measure of resilience. More specifically, during the CD-RISC's psychometric analysis, Connor and Davidson (2003) found that the scale positively and significantly correlated with the Kobasa Hardiness Scale (Kobasa, 1979b) at $r = .83$ ($p < .0001$). An abbreviated version of the CD-RISC, the CD-RISC 2, was found to significantly correlate with the Kobasa Hardiness Scale in two different groups, one group which had patients with depression on paroxetine and venlafaxine XR ($r = .30$, $p < .05$) and patients with Generalized Anxiety Disorder being treated with kava ($r = .73$, $p < .01$; Vaishnavi, Connor, & Davidson, 2007). However, the correlations between these measures were dramatically different depending on the mental health diagnosis of group members and psychopharmacological treatment. Nonetheless, these analyses do not help researchers delineate how much overlap exists between these constructs, but merely adds to the

literature that supports that the two concepts are related. Thus, to what extent are resilience and hardiness similar to one another? To what extent are they different? To what extent do they overlap? Without a doubt, there is a need for clarity due to the varied definitions, conceptualizations, and measurements that presently exist in the research literature.

Of the three concepts, meaning and resilience have been investigated to a much greater degree than hardiness, across a wider range of contexts, frameworks, and studies. Much less has been done with hardiness outside of Kobasa and Maddi's framework. However, researchers like Bartone have been examining dispositional resilience, a term used synonymously with hardiness. All three constructs need to be investigated in relation to one another as ambiguity remains despite the research that has been done thus far. All three concepts have been around for decades and these definition, conceptualization, and measurement issues have not been resolved. There is a need to investigate in systematic and rigorous fashion how researchers operationally define and measure constructs such as meaning in life, resilience, and hardiness. Within each respective field of study, ambiguity persists with respect to how best to define, delineate, and measure these constructs (Aburn et al., 2016; Bartone, 2006; Herrman et al., 2011; Wagnild, 2009a; Weathers et al., 2016; Windle et al., 2011; Wong & Wong, 2012). Consequently, this ambiguity has permitted researchers to select how to define and measure these concepts rather than use a universal operational definitive and a gold standard of measurement (e.g., Aburn et al., 2016; Park & George, 2013; Windle et al., 2011). Without a gold standard of measurement, it becomes difficult to consolidate the literature, as findings may be not comparable. From this inconsistency, it is hard to create reputable overarching results across studies as researchers may be discussing variations of different constructs due to inconsistent operational definitions and measurement approaches. Moreover, as these constructs have been associated with adaptive

psychological and physical outcomes following adversity (e.g., Arnetz et al., 2013; Hasel et al., 2011; Maddi, 1999; Schulenberg et al., 2008; Tugade & Fredrickson, 2004; Weathers et al., 2016), even with imprecision within the literature, greater scientific clarity could lead to more effective research on treatment following a potentially traumatic event. Greater clarity could lead to more effective research and treatment outcomes for those who directly experience or witness a significant stressor.

From the literature, there is clear overlap and confusion about the relationship between resilience, meaning in life, and hardiness. Some researchers posit these are different, but highly related concepts while others seem to blend or use these terms interchangeably (Bartone, 2006; Herrman et al., 2011; Wagnild, 2009a; Weathers et al., 2016; Windle et al., 2011; Wong & Wong, 2012). More specifically, some researchers use hardiness and resilience interchangeably (Bartone, 2006) and others conceptualize meaning in life as the foundation of resilience and hardiness (Kobasa, 1979b; Maddi, 2002; Wagnild, 2009a). This literature ambiguity and overlap lends itself to this question: are meaning in life, resilience, and hardiness scales measuring the same general construct or do they simply share certain characteristics? The main objective of the present study is to address this question.

The Present Study

The main hypothesis of the current study postulated that items from meaning in life, resilience, and hardiness measures share a common variance and create a general factor while other items may not share significant variance or even relate to this general construct. This hypothesis allows items from measures of meaning in life, resilience, and hardiness the freedom to create a unidimensional (a single, general factor) and multidimensional model (items that tap into similar content domains and are independent of the general factor). A hypothesis that

incorporates both models was important as there is disagreement within the literature with regard to how much overlap exists between these concepts (Bartone, 2006; Herrman et al., 2011; Wagnild, 2009a; Weathers et al., 2016; Windle et al., 2011; Wong & Wong, 2012). Moreover, researchers have indicated that item response data with psychological measures are consistent with both unidimensional and multidimensional structures (Reise, 2012; Reise, Moore, & Haviland, 2010). Consequently, creating a hypothesis that recognized these items may create both unidimensionality and multidimensionality was important as this is consistent with current item response data theory within the field of psychology. In other words, it was hypothesized that measurement items from scales of meaning in life, resilience, and hardiness comprise a single latent variable or general factor. After accounting for this general factor, it was hypothesized that these items also potentially tap into specific factors of meaning in life, hardiness, and resilience.

This study is the first in a program of research designed to yield an understanding of the similarity/overlap/differences between the concepts of meaning in life, resilience, and hardiness. As discussed above, each of these three concepts is important due to their relationship with positive coping outcomes physically and psychologically (e.g., Arnetz et al., 2013; Hasel et al., 2011; Maddi, 1999; Schulenberg et al., 2008; Tugade & Fredrickson, 2004; Weathers et al., 2016). If a general construct is found within this study, it may create greater clarity with regard to how meaning in life, resilience, and hardiness are conceptualized, related, and measured and in turn synthesize the literature and/or give the literature a common language moving forward.

II. METHOD

Participants

Participants were 18 years of age or older and were recruited from two universities in separate geographic regions of the United States, a large public university in the Midwest and a medium-sized public university in the South. Participants missing less than 5% of their overall data were imputed using a multiple imputation procedure per each measure using the *mice* library (Tabachnick & Fidell, 2013; van Buuren & Groothuis-Oudshoorn, 2011). It was important that participants answer the surveys in their entirety for the analyses to be completed. To examine if outliers existed in the data, Mahalanobis D^2 was calculated (Mertler & Reinhart, 2017). Participants were considered outliers if their D^2 score was larger than a $\chi^2(df)$ $p < .001$, wherein *df* was calculated by using the number of items in the Mahalanobis calculation. Figure 2 depicts the data cleaning process for each university. More specifically, this figure depicts the total number of participants collected from each university and the number of participants removed due to age specifications, missing more than 5% of data, and due to outliers. This data cleaning information is further detailed in the text below.

Data for 2,532 participants were collected at the Midwest university by the time data were collected at the Southern university. The Midwest university data were collected earlier than the Southern university as the Midwest university received grant money to collect data for a separate project where the aim was to create an adapted meaning in life computerized

assessment. However, as the Midwest university and the Southern university often collaborate, the Midwest university also collected data for the current study while data were collected for their grant. Data were collected from two universities, as two different samples adds more variability to the overall sample and thus creates more robust findings.

One hundred and sixty six of the 2,532 participants from the Midwest university were individuals aged 17 and younger. As the study specified that participants must be aged 18 or older to participate, these individuals were excluded. Following this adjustment, the data set was examined for missing data and potential outliers. Participants missing less than 5% of data were then imputed. Overall, 1,303 participants were missing less than 5% of their overall data and were imputed. One thousand sixty three participants were missing more than 5% of data and were removed from the dataset. Next, outlier analyses were computed and it was found that data from 114 participants were outliers and thus they were consequently removed from the dataset.

Accordingly, a total of 1,189 students comprised the sample from the large public university in the Midwest. Participants' ages ranged from 18 to 55 (M = 19.51, SD = 3.26), with 61.14% (n = 727) identifying as female and 38.52% (n = 458) identifying as male. Less than one percent of participants (.34%, n = 4) did not report their gender. With regard to ethnicity, 81.41% (n = 968) of participants identified as White, 6.56% (n = 78) identified as Black, 3.62% (n = 43) identified as Asian, 2.78% (n = 33) identified as Hispanic, .67% (n = 8) identified as Native American, 2.10% (n = 25) identified as "Multiple" ethnicities, .34% (n = 4) identified as Pacific Islander, 1.18% (n = 14) identified as "Other," and 1.34% (n = 16) did not report this information. Additionally, 67.28% (n = 800) identified as freshman, 18.17% (n = 216) identified as sophomores, 9.25% (n = 110) identified as juniors, 4.63% (n = 55) identified as seniors, .42%

(n = 5) identified as graduate students/other, and lastly .25% (n = 3) did not report this information.

Data for an additional 475 participants were collected at the Southern university over a semester and a half. All 475 participants reported being 18 years of age or older. Therefore, no data were removed on the basis of age. The data set was then examined for missing data and participants missing less than 5% of their overall data were then imputed. Four hundred and fifty six participants were missing less than 5% of data and were imputed. Nineteen participants were missing more than 5% of data and were removed from the dataset. Data from 37 participants were then identified as outliers and were consequently removed from the dataset. In all, the data set included 419 participants from the large public university in the South. Participants' ages ranged from 18 to 43 and above (M = 19.76, SD = 2.30), with 74.70% (n = 313) identifying as female, 25.06% (n = 105) identifying as male, and .24% (n = 1) identifying as "Other." With regard to ethnicity, 79.47% (n = 333) of participants identified as White, 13.13% (n = 55) identified as Black, 2.63% (n = 11) identified as Asian, 2.39% (n = 10) identified as Hispanic/Latino, 1.43% (n = 6) identified as multiracial, .24% (n = 1) identified as "Other," and .71% (n = 3) did not report this information. Additionally, 53.70% (n = 225) identified as freshman, 19.33% (n = 81) identified as sophomores, 13.37% (n = 56) identified as juniors, 13.13% (n = 55) identified as seniors, and .47% (n = 2) identified as graduate students/other.

Materials

Meaning in Life. The current study employed two prominent, psychometrically sound measures of the perception of meaning. For the current study, meaning in life was defined by how one determines and identifies purpose in life (Frankl, 1959/2006; Schulenberg et al., 2008) and therefore was measured using the Meaning in Life Questionnaire Presence scale (MLQ-P;

Steger et al., 2006) and the PIL-SF (Schulenberg et al., 2011). While the MLQ contains subscales to measure both presence of meaning (i.e., perceived meaning) and search for meaning (i.e., the motivation to discover meaning), because presence of meaning in life was the concept of interest to the current study, only the MLQ's presence subscale data were used in the analyses. These two measures of meaning in life were selected on the basis of their operational definitions of the perception of meaning in life, because of their prominence in the literature, and because of the promising psychometric properties that have been demonstrated in a range of studies in a number of different contexts (see for instance, Park & George, 2013). The PIL-SF was derived from the original 20-item PIL using rigorous factor-analytic procedures (Schulenberg et al., 2011; Schulenberg et al., 2016). Moreover, the original PIL has over 50 years of research behind it, while the MLQ is one of the most widely used measures of meaning presently (Bronk, 2013; Park & George, 2013).

Meaning in Life Questionnaire—Presence subscale (MLQ-P). The MLQ (Steger et al., 2006; see Appendix A) is a 10-item assessment designed to measure two facets of meaning in life: Presence of meaning and Search for meaning. Five questions comprise the presence in life facet and five questions comprise the search for meaning facet. Although the MLQ was administered to participants in its entirety, as this was the way the measure was developed, only MLQ-P scores were analyzed given their direct relevance to the current study's objectives.

The MLQ uses a seven-point Likert-type scale ranging from *1,* which represents *Absolutely True* to *7*, which denotes *Absolutely Untrue*. Total scores for the MLQ-P are calculated by summing the five individual items (with one item being reverse scored). Scores range from 5 to 35. In a more recent sample, Park and Jeong (2016) found the mean for the measure to be 24.36 (*SD* = 6.28). Higher scores indicate greater perceived presence of meaning,

whereas lower scores indicate lower perceived presence of meaning. An example item from the Presence scale is "My life has a clear sense of purpose."

Regarding reliability, MLQ-P scores typically yield internal consistency coefficients ranging from the low .80s to the low .90s (Park, 2010a; Park & Jeong, 2016; Schulenberg et al., 2011; Steger et al., 2006; Steger & Kashdan, 2007). With regard to support for validity, factor-analytic studies of the MLQ-P indicate the items group together significantly (Steger et al., 2006). Moreover, MLQ-P scores significantly and positively correlate with life satisfaction, positive emotions, personality traits associated with well-being, mindfulness, and with adjustment in college students, demonstrating convergent validity support for the subscale (Bloch et al., 2016; Steger et al., 2006; Steger, Kashdan, Sullivan, & Lorentz, 2008; Steger & Kashdan, 2007; Trevisan, Bass, Powell, & Eckerd, 2017). MLQ-P scores also significantly and positively relate to other measures of meaning, such as the PIL-SF (Schulenberg et al., 2011). In addition, MLQ-P scores significantly and negatively correlate with depression, neuroticism, and psychological distress, offering discriminant validity support for the subscale (Park & Jeong, 2016; Steger et al., 2006; Steger et al., 2008).

The Purpose in Life Test-Short Form (PIL-SF). The PIL-SF (Schulenberg et al., 2011; see Appendix B) is a brief, four-item version of the original 20-item Purpose in Life test (PIL; Crumbaugh & Maholick, 1964, 1969), which was designed to assess the perception as to whether one's life is meaningful and filled with purpose. The PIL-SF employs a seven-point Likert-type scale with different response anchors depending on the content of a given item. For example, with the item "My personal existence is…" respondents can choose from 1 to 7, with 1 being "utterly meaningless without purpose," 4 being neutral, and 7 being "very purposeful and meaningful." Scores range from 4 to 28, with lower scores indicative of lower perceived

meaning in life and higher scores representative of greater perceived meaning in life (Schulenberg et al., 2011; Schulenberg et al., 2016). In two adult clinical samples that witnessed the Deepwater Horizon oil spill, a sample mean of 19.02 (*SD* = 5.37) was observed in those who perceived no effect from the oil spill and a sample mean of 18.87 (*SD* = 5.54) was observed in a sample who perceived they were affected by the oil spill (Aiena et al., 2016). Within an adolescent sample, which witnessed the Deepwater Horizon oil spill, the mean of the measure was 21.34 (*SD* = 5.41; Schulenberg et al., 2016). Finally, within a college student sample, a mean of 23.33 (*SD* = 3.06) was observed (Schnetzer, Schulenberg, & Buchanan, 2013).

With regard to psychometric properties, specifically internal consistency reliability, researchers have reported alphas ranging from .79 to .89 (Aiena et al., 2016; Peter, Schulenberg, Buchanan, Prodinger, & Geyh, 2016; Schnetzer et al., 2013; Schulenberg et al., 2011; Schulenberg et al., 2016; Wang, Koenig, Ma, & Al Shohaib, 2016). In terms of validity support, researchers have demonstrated good convergent validity as PIL-SF scores significantly and positively correlate with social support, optimism, self-kindness, self-esteem, vitality, and happiness (Baczwaski et al., 2012; Longo, Coyne, & Joseph, 2017; Schulenberg et al., 2011; Schulenberg, Baczwaski, & Buchanan, 2014; Wang et al., 2016). Moreover, the PIL-SF demonstrates good discriminant validity as it is negatively correlated with measures of depression, anxiety, stress, fatigue, and sleep disturbance (Aiena et al., 2016; Baczwaski et al., 2012; Longo et al., 2017; Schulenberg et al., 2011; Schulenberg et al., 2014; Wang et al., 2016). Concerning structural validity, factor-analytic procedures support that the scale is measuring a single construct (Schulenberg & Melton, 2010; Schulenberg et al., 2011).

Resilience. The study used two prominent, psychometrically sound measures of resilience, the BRS (Smith et al., 2008) and RS-14 (Wagnild & Young, 1993). For the current

study, resilience was defined as the ability to recover from stress (Agnes, 2005; Cosco et al., 2017). The BRS and RS-14 were used as both are psychometrically sound and measure different conceptualizations of resilience. The RS-14 was used as the measure examines protective factors that promote resilience (perseverance, equanimity, meaningfulness, self-reliance, and existential aloneness). Most resilience measures in the field measure protective factors or coping resources that promote resilience (Ahern et al., 2006) and thus it was important incorporate this form of resilience measurement into the current study. Moreover, the RS-14 was used as the measure contains a meaning in life facet and the current study aimed to bridge the gap between meaning in life and resilience research. In contrast, the BRS was used as the measure examines bouncing back behaviors rather than protective resources that promote resilience outcomes. Again, the BRS was one of the first measures of resilience to examine bouncing back following a stressor rather than assessing protective factors and coping resources that promote resilience (Smith et al., 2008).

The 14-Item Resilience Scale (RS-14). As mentioned above, the RS-14 (Wagnild, 2009b; see Appendix C) was one of the measures used to assess resilience. The RS-14 is a shortened version of the previously developed 25-item Resilience Scale (Wagnild & Young, 1993), developed to ease the burden on the responder and on the basis of the psychometric utility of the items. The RS-14 is purported to assess five aspects of resilience, specifically meaning/purposeful life (items 2, 9, 13), perseverance (items 6 and 8), equanimity (items 3 and 10), self-reliance (items 1, 5, 7, 12, 14), and existential aloneness (items 4 and 11).

The RS-14 (Wagnild, 2009b) uses a seven point Likert-type response format where *1* represents *Strongly Disagree* and *7* represents *Strongly Agree*. The lowest score one can achieve on the RS-14 is a 14. The highest possible score is a 98. Lower scores suggest low perceived

resiliency and high scores represent greater perceived resilience. Per the measure's manual, scores may be interpreted in the following fashion: "Very Low" (14-56), "Low" (57-64), "On the Low End" (65-73), "Moderate" (74-81), "Moderately High" (82-90), and "High" (91-98). Individuals who score in the "Very Low" range are typically anxious, depressed, pessimistic, dissatisfied with their lives, and may want to make life changes (Wagnild, 2009b). Respondents who score in the "Low" range report some anxiety and depression and may be experiencing difficulties they are trying to resolve, but experience trouble letting things go. People who score within the "Moderate" range do not have low or high-perceived resilience, but still possess resilient characteristics. Respondents who score in the "Moderately High" range typically are doing well and possess resilient characteristics. In general, those within this category perceive life as being meaningful. Finally, those in the "High" range are considered to be very resilient. They are rarely depressed or anxious, tend to be optimistic, and are able to regain typical functioning when faced with life difficulties.

In a recent study, Wagnild (2015) found that the average RS-14 score in a sample of 8,903 adults was 78.1. In a study that used data from both clinical and college student samples, Aiena and colleagues (2015) reported RS-14 data for a clinical sample that witnessed the Deepwater Horizon oil spill as having a mean of 63.11 (*SD* = 19.87), with the RS-14 data for a college student sample having a mean of 74.88 (*SD* = 17.05). In a sample of US military service members and Veterans, the mean for the measure for active service members was reported to be 80.56 (*SD* = 15.31), with a reported mean of 74.54 (*SD* = 16.88) for Veterans (Rice & Liu, 2016). Recent studies have demonstrated that the internal consistency reliability for the measure ranges from .88 to .93 (Aiena et al., 2015; Callegari et al., 2016; Madewell & Ponce-Garcia, 2016).

As for validity support, two studies have reported that the RS-14 is a one-factor model even though Wagnild created the measure to assess five facets of resilience. The author of the measure, Wagnild (2009b) found item loadings greater than .40 (Wagnild, 2009b) when she conducted principal component analyses. Aiena and colleagues (2015) further supported Wagnild's findings with all items loading onto one factor (> .30). The RS-14 also has great convergent validity with the original Resilience Scale ($r = .97$, $p < .001$; Wagnild, 2010) and the measure is significantly and positively correlated with variables such as life satisfaction, meaning in life, acceptance and positive reframing coping strategies, active coping, positive quality of life, and humor (Aiena et al., 2015; Callegari et al., 2016; Rice & Liu, 2016). The RS-14 has been supported to be significantly and negatively correlated with measures of depression, anxiety, behavioral disengagement, and self-blame (Aiena et al., 2015; Callegari et al., 2016; Rice & Liu, 2016).

The Brief Resilience Scale (BRS). The BRS (Smith et al., 2008; see Appendix D) is a six-item scale that measures resilience, that is, whether and how one is able to bounce back from stress. According to Smith and colleagues, the BRS is the only resilience scale that measures the most basic operational definition of resilience posited by Agnes (2005). Agnes reported that resilience is not the resources needed to recover, but the ability one has to bounce back following adversity. The scale was created using a four-group sample involving undergraduates, patients in cardiac rehabilitation, women with fibromyalgia, and healthy controls.

The BRS uses a five-point Likert-type scale where *1* represents *Strongly Disagree* and *5* represents *Strongly Agree* (Smith et al., 2008). Items 2, 4, and 6 are reverse scored in order to compute a mean score. The BRS uses a mean for the scale score and not a sum. Scores range from 1 to 5 where lower scores represent lower reported ability to bounce back from stress and

higher scores represent greater reported ability to bounce back from stress. Scores ranging from 1.00-2.99 are interpreted as low resilience, 3.00-4.30 normal resilience, and 4.31-5.00 high resilience (Smith, Epstein, Oritz, Christopher, & Tooley, 2013). The researchers did not create cut-offs for the score nor did they make recommendations as to what scores constitute low or high values. In a more recent sample of Australian ambulance officers, the measure had a mean score of 3.68 (*SD* = .71; Shakespeare-Finch & Daley, 2017), which is comparable to the scores found by Smith and colleagues (2008).

Internal consistency reliability of BRS scores tends to be good to excellent, with a Cronbach's alpha range of .80 to .91 (Shakespeare-Finch & Daley, 2017; Smith et al., 2008). The scale also received test-retest reliability scores of .69 (for one month re-test time) and .62 (for three month re-test in two samples; Smith et al., 2008).

Regarding validity, the BRS exhibits good convergent validity as the scale has significant, positive correlations with optimism, purpose in life, positive affect, life satisfaction, agency, self-compassion, the Connor-Davidson Resilience Scale, and the Ego Resilience Scale (Kemper, Mo, & Khayat, 2015; Satici, 2016; Smith et al., 2008). With regards to discriminant validity, Smith and colleagues (2008) found in four different samples that the measure is significantly and negatively related to anxiety, depression, negative affect, sleep distress, and perceived stress. The BRS is also significantly and negatively related to vulnerability and neuroticism (Balgiu, 2017; Kemper et al., 2015; Satici, 2016). In a study that reviewed the psychometric properties of 15 resilience scales, Windle, Bennett, and Noyes (2011) reported that the BRS was one of the superior measures of resilience within the resilience field of research. Concerning factor structure, the BRS was supported to have a one-factor solution in four different samples (Smith et al., 2008).

Hardiness. For the current study, hardiness will be defined as a stress resistance resource (Kobasa & Maddi, 1977; Maddi, 2006). Maddi and his colleagues have exclusively conducted most hardiness research, studies using the PVS III-R. Maddi and Khoshaba created a Hardiness Institute and copyrighted the use of the PVS and its revisions. While Maddi and colleagues have extensively published within the hardiness literature using revisions of the PVS to measure hardiness, Bartone and his colleagues use the Dispositional Resilience Scale or the Dispositional Resilience Scale-15 (Bartone, 1995, 1999, 2007) to assess hardiness. As the Dispositional Resilience Scale and the Dispositional Resilience Scale-15 measures hardy-resilient style characteristics and is not assessing just hardiness, this measure was not used for the current study. As a result, the current study used the PVS III-R to study hardiness.

Personal Views Survey III-R (PVS III-R). The PVS III-R (Maddi et al., 2006; see Appendix E) is an 18-item survey that measures hardiness. The PVS III-R is the revised third edition of the original Personal Views Survey (Kobasa et al., 1982; Maddi, 1997). The survey uses a four-item Likert-type scale ranging from 0 to 3 to represent personal relevance where *0* signifies *Not True* and *3* denotes *True* (Maddi et al., 2006). The lowest score is 0 and the highest score that can be obtained is 54. Lower scores represent lower levels of personal relevance to hardiness and higher scores represent higher levels of personal relevance to hardiness. In a recent study conducted by Abdollahi, Talib, Yaacob, and Ismail (2014), the mean for the measure was 31.21 (SD = 12.78). Descriptive information for the measure was not computed for the current study, as the Hardiness Institute does not distribute the PVS III-R scoring algorithm. As the current study examined the item factor-loading patterns of the PVS III-R, the descriptive information of the measure was not necessary to compute.

The scale contains facets that measure the three domains of hardiness, commitment, control, and challenge. These facets were independently validated using factor analysis of item scores by Sinclair and Tetrick (2000). More specifically, using item scores, it was found that the scale has three positively-related first-order factors consistent with the conceptualization of commitment, control, and challenge. Second-order factor findings were consistent with the concept of total hardiness. Examples of items related to the conceptualization of commitment, control, and challenge include, respectively: "By working hard, I am always able to achieve my goal," "When I make plans, I'm certain I can make them work," and "Changes in routine provoke me to learn."

The reliability coefficient for the overall PVS III-R was calculated to be .80, while the Commitment facet had an alpha of .69 (Maddi et al., 2006), the Control facet had an alpha of .57, and the Challenge facet had an alpha of .73. In a more recent study, the total hardiness score yielded a reliability coefficient of .75 (Maddi, 2016). Consequently, the reliability for this scale overall is very good, but the Commitment facet's reliability is minimally acceptable, the Control facet's reliability is unacceptable, and the Challenge facet's reliability is respectable (DeVellis, 2012). This varied reliability may imply that some of the items could be measuring different constructs or some of these items are not effective in measuring hardiness. However, as the current study is examining information at the item level, this varied reliability is not concerning per se.

In terms of convergent validity support, hardiness as assessed by the PVS III-R is significantly and positively correlated with adaptive problem solving skills, grit, emotional intelligence, and money conservation (Abdollahi et al., 2014; Maddi et al., 2013). As for discriminant validity support, hardiness is significantly and negatively related to compulsive

gambling, compulsive buying, depression, state anxiety, and trait anxiety (Maddi, 2016; Maddi, Brow, Khoshaba, & Vaitkus, 2006; Maddi et al., 2013).

Procedure

The Institutional Review Board at the large public university in the Midwest approved the study protocol. At this university's department of psychology, SONA, an online participant recruitment tool, was used to obtain research participants. Participants were students enrolled in a psychology course and received class credit or extra credit for participation. Qualtrics, an online survey tool, was used to distribute the survey electronically to participants. Each participant completed a survey that included a consent form and all of the measures; however, the measures were counterbalanced to decrease practice effect error and so each participant received a random order of the measures. Consequently, the study used the randomization tool in Qualtrics to vary the measurement order per participant. At the large public university in the Midwest, students were administered these scales as part of a larger study on scale psychometrics and thus completed several additional measures as part of the study protocol. The survey took around an hour for participants to complete in its entirety. Participants at the university in the Midwest completed a survey comprised of 10 scales altogether whereas the Southern university's survey was comprised of six scales (as described in this study and as noted below).

Data collection for the second sample, obtained from the medium-sized public university in the South, replicated the above procedure with some differences. The Institutional Review Board at this institution approved the study protocol and participants were recruited using the department of psychology's SONA, an online participant recruitment tool, to obtain research participants. Participants were students enrolled in a psychology course, and received either class

credit or extra credit for participating. Qualtrics was also used to obtain informed consent and to distribute the survey. The measures were also randomized using the Qualtrics randomization function to guard against practice effect error. The survey was comprised of the two meaning in life measures, the two resilience measures, and the hardiness measure described above. The survey took around 5 to 10 minutes for participants to complete in its entirety.

Statistical Analyses

It was hypothesized that items from meaning in life, resilience, and hardiness measures would create a general factor and thus form a unidimensional model. It was also hypothesized that some items may be independent of this model (i.e., representing the presence of sub-factors) and thus multidimensionality would also need to be captured. In order to assess if one latent variable factor exists along with sub-factors, factor-analytic statistics were used. A bi-factor exploratory and a bi-factor confirmatory factor analysis were specifically conducted as these forms of factor-analytics permit unidimensionality and multidimensionality to exist within a model.

Power. In general, factor-analytic statistics are a "large-sample" procedure (Costello & Osborne, 2005, p. 5). Large samples are important for factor-analytic designs as a greater sample size ensures generalizability and replication of the results. However, it is important to note that there are several guidelines for the amount of participants needed to conduct exploratory and confirmatory factor analysis procedures (MacCallum, Widaman, Zhang, & Hong, 1999). Everitt (1975) recommended having at least 10 people per item as a guideline for the analyses, whereas Gorsuch (1983) recommended having at least five people per item. As the current study involves 47 questions total, Everitt's guideline would require data from at least 470 participants, whereas Gorsuch's guideline would require a minimum of 235 participants. Alternatively, Comrey and

Lee's (1992) guideline is to collect data from 300 participants per factor analysis. Consequently, the researcher aimed for the middle ground, that is, to achieve a minimum sample size of 300 people per analysis, with the goal of collecting data from additional participants if possible. This minimum goal was based on Comrey and Lee's (1992) recommendation and is between the number of participants suggested by the guidelines of Everitt and Gorsuch. Ultimately, a total of 804 participants were for both the bi-factor exploratory factor analysis and another 804 participants were used for confirmatory factor analysis, respectively. Thus, the threshold for the minimum number of participants per analysis was exceeded in the current study.

Exploratory bi-factor analyses. R Package for Structural Equation Modeling (Rosseel, 2012) was used to perform the statistical analyses. To examine overall construct overlap between resilience, meaning, and hardiness a bi-factor exploratory factor analysis was utilized using the *psych* libraries. Bi-factor exploratory factor analysis allows researchers to first control for a general factor. After accounting for this variance, domain specific factors are observed to examine what factors present after (Beaujean, 2015; Jennrich & Bentler, 2011; see Figure 1). Half the sample from each university was randomly selected, and their data analyzed using bi-factor exploratory factor analysis.

In this study, a general factor was expected with a potential of multiple specific sub-factors to appear. Jennrich and Bentler's (2011) oblique bi-factor rotation method was implemented to accommodate the expected structure. Scree plots and a parallel analysis were used to determine how many factors to extract (Preacher & MacCallum, 2003; Revelle, 2017). Scree plots demonstrated the eigenvalues (i.e., factor variance) presented in the data. Scree plots depict eigenvalues on the y-axis and number of factors on the x-axis. Eigenvalue extraction follows a pattern of diminishing returns in that each successive factor has a lower eigenvalue

than the prior, which causes a downward slope across the x-axis. Often the decline is most steep across the initial few factors and then plateaus. The transition between the initial steep decline and the plateau often forms an angle resembling an elbow. The so-called "elbow" rule suggests that the optimum number of factors is determined at the point of the angle.

A parallel analysis compares the eigenvalues of the data to those computed from a set of randomly generated data sets. The synthetic data are generated using Monte-Carlo methods and follow the same structure as the original data. Aggregating over many synthetic data sets forms a benchmark for the eigenvalues that would be expected by chance alone. In a parallel analysis, eigenvalues from the original data are retained as long as they are of a higher value than those from the upper 95% confidence interval of the synthetic data (Preacher & MacCallum, 2003; Revelle, 2017). For the following study, if the indicators from the scree plot and the parallel analysis did not match, both models were examined, and the model with the simplest solution and adequate fit indices (described below) was selected.

A strength of the bi-factor analyses is that it allows for a general factor to be examined while also allowing items that are independent to fall out of the model, allowing multidimensionality to also occur. However, some items may be related to both the general factor and specific sub-factors. Consequently, the researchers had to determine if these items would be forced to be related to the general factor only or both the general factor and specific sub-factors. With respect to whether items are interpreted to load onto a given factor, Preacher and MacCallum (2003) suggested $\geq .30$ as a guideline. This guideline has been adopted by other researchers, becoming a convention in research (e.g., Joshanloo, Jose, & Kielpikowski, 2016; Reise et al., 2010). Thus, whatever items loaded at .30 or higher were identified as one overall

factor and then whatever items remained were examined to assess if they loaded at the .30 level onto another factor(s).

Researchers often discuss simple structure when examining scale development using factor analysis. Simple structure occurs when items from a scale load onto one and only one factor, as described above. In this study, items were expected to load onto both a general and a specific sub-factor. Therefore, items with these loadings were kept in the study and were indicated as items that measure both the general and specific sub-factors (McDonald, 1999, 2000). Items that did not load onto the general factor were eliminated from the confirmatory bi-factor analyses (Buchanan, Valentine, & Schulenberg, 2014; Preacher & MacCallum, 2003).

Following absolute and comparative fit analyses, the reliability of the factors were assessed as a way to test the adequacy of the bi-factor exploratory factor-analytic model. Essentially, it is important to assess if the model consistently measures both the general factor and specific sub-factors. Consistency across factors is key in order to assign meaning to factors. More specifically, omega hierarchical was computed to assess reliability as this form of reliability testing is good for bi-factor structures (Rodriguez, Reise, & Haviland, 2016). It was important to use a reliability test suited for bi-factor structures as some reliability tests are based on unidimensionality. As unidimensionality and multidimensionality were assessed in the current study, a reliability test that allows both structures was necessary. Omega hierarchical examines the variance that can be attributed to the general factor, accounting for all specific factors and consequently was the best form of reliability analysis for the current study.

Confirmatory bi-factor analyses. Again, *R* Package for Structural Equation Modeling (Rosseel, 2012) was used to perform the statistical analyses. To determine if the factor model could be replicated, the other half of the sample was used to conduct a bi-factor confirmatory

factor analysis (Beaujean, 2015). This model was programmed in *R* using the *lavaan* library with maximum likelihood estimation due to the assumption of normality in the data. If multiple specific sub-factors were found, these latent variables were uncorrelated to match exploratory models (Chin, Buchanan, Ebesutani, & Young, 2018). These latent variables were uncorrelated as the goal was to separate variance into distinct factors. Items were checked to determine if they significantly ($p < .05$ with $\geq .30$ loadings as described above) load onto their expected general and specific sub-factors as found in the exploratory model.

Goodness of fit was assessed for both models using absolute fit indices: the model chi-square, the root mean square error of approximation and its confidence interval (RMSEA; Steiger, 1990), and the standardized root mean residual (SRMR; Bentler, 1990). Goodness of fit analyses measure the discrepancy between the variance/covariance matrix of the data and the variance/covariance matrix implied by the model (Brown, 2015; Kline, 2016). The model chi-square tests the null hypothesis of no difference between the variance/covariance matrices of the data and the implied model. The chi-square is highly powered in samples with more than a few hundred cases, and models frequently fail the test even with substantively inconsequential levels of misfit. Consequentially, other indices, like RMSEA, are used to supplement the chi-square. RMSEA assesses approximate fit using a parsimonious correction. SRMR is the squared average discrepancy between the correlations in the data versus those implied by the model. For both RMSEA and SRMR, the indicator of $\leq .08$ (Steiger, 2007) was used for the current study. Lower scores are desirable, as they indicate smaller mismatch between the model and the data, and researchers have recommended a cutoff of .08 for RMSEA and SRMR (Hu & Bentler, 1999). In terms of comparative fit indices, the Tucker–Lewis non-normed fit index (TLI; Bentler & Bonnet, 1980) and the comparative fit index (CFI; Bentler, 1990) were used. For TLI and CFI,

good fit was considered at > .95 (Hu & Bentler, 1999). These values represent a match between the model and the data, where scores closer to one indicate a better representation of the data. Following absolute and comparative fit analyses, the reliability of the factors was assessed using omega hierarchical. Omega hierarchical specifically examines the variance that can be attributed to the general factor, accounting for all specific factors. It was the best form of reliability testing for the current study.

III. RESULTS

Exploratory bi-factor demographics. For the bi-factor EFA analyses, data from 804 participants were used. Of the 804 participants, 594 participants were from the Midwest university and 210 participants were from the Southern university (refer to Figure 2 for a review of the data cleaning process and sample split by bi-factor analysis). The mean age of the bi-factor EFA sample was 19.44 (*SD* = 2.8). With regards to gender, 63.81% of the sample identified as female, 36.07% identified as male, and .12% did not endorse either gender. The most prominent ethnicity represented in the bi-factor EFA sample was White (80.72%), followed by Black (9.08%), Asian (3.23%), Hispanic (2.25%), Native American (.50%), and Pacific Islander (.37%). Small percentages of participants identified as "Multiple" ethnicities (1.49%), "Other" ethnicities (1.49%), or preferred to not disclose this information (.87%). The sample was predominantly freshmen (62.43%), followed by sophomores (17.79%), juniors (10.95%), seniors (8.08%), and graduate students (.50%), with a small percentage choosing to not identify a classification (.25%).

Exploratory bi-factor measure descriptives. Table 1 depicts descriptive data (e.g., means, standard deviations, and Cronbach's alphas) for the measure items and totals by sample (based on data from respondents included in the overall bi-factor EFA, as a group but also considering whether respondents were from the Southern university or the Midwestern university). Pertaining to the MLQ-P, respondents reported high presence of meaning in life and the means and standard

deviations of the groups were comparable to one another (overall bi-factor EFA *M* = 26.22, *SD* = 5.87; Southern university *M* = 26.88, *SD* = 5.87; Midwestern university *M* = 25.99, *SD* = 5.86). These data were also similar to the mean and standard deviation observed in Park and Jeong's (2016) recent study (*M* = 24.36, *SD* = 6.28). Regarding internal consistencies, the current samples' alphas are consistent with alphas commonly reported in the literature (high .80s and low .90s; Park, 2010a; Park & Jeong, 2016; Schulenberg et al., 2011; Steger et al., 2006; Steger & Kashdan, 2007).

In terms of PIL-SF scores, range from 4 to 28, with lower scores indicative of lower perceived meaning in life and higher scores indicative of greater perceived meaning in life (Schulenberg et al., 2011; Schulenberg et al., 2016). The means of the current samples (overall bi-factor EFA *M* = 22.28, *SD* = 3.93; Southern university *M* = 23.21, *SD* = 4.20; Midwestern university *M* = 21.95, *SD* = 3.78) were similar to one another, and comparable to those observed within another study using a college student sample (*M* = 23.33, *SD* = 3.06; Schnetzer et al., 2013). For the PIL-SF, researchers often report alphas in the .80s (Aiena et al., 2016; Peter et al., 2016; Schnetzer et al., 2013; Schulenberg et al., 2011; Schulenberg et al., 2016; Wang et al., 2016), which is consistent with data obtained from the current samples.

For RS-14 scores, samples reported moderate resilience. The means found in the current samples (overall bi-factor EFA *M* = 79.52, *SD* = 12.68; Southern university *M* = 80.51, *SD* = 12.35; Midwestern university *M* = 79.19, *SD* = 12.79) were higher than the mean reported in a recent study that used a college student sample (*M* = 74.88, *SD* = 17.05; Aiena et al., 2015). With regards to internal consistency, the RS-14 often yields coefficient alphas in the .90s (Wagnild, 2015), which is the case with the current data.

In the bi-factor EFA samples, whether considered in total or by institution, BRS scores were reported to be normal resilience. As compared to a more recent sample of Australian ambulance officers (M = 3.68, SD = .71; Shakespeare-Finch & Daley, 2017), the scores in the current sample were slightly lower (overall bi-factor EFA M = 3.38, SD = 0.78; Southern university M = 3.35, SD = 0.75; Midwestern university M = 3.38, SD = 0.78). Internal consistency reliability of BRS scores range from good to excellent, that is, from the .80s to the low .90s (Shakespeare-Finch & Daley, 2017; Smith et al., 2008). Cronbach's alphas for the current study were comparable to those reported in the literature.

Pertaining to the PVS III-R, similar scores were calculated by sample (overall bi-factor EFA M = 35.11, SD = 6.75; Southern university M = 34.00, SD = 6.83; Midwestern university M = 35.50, SD = 6.69). Moreover, these data were higher compared to figures calculated from a recent sample obtained by Abdollahi and colleagues (2014). These authors observed a mean of 31.21 and a standard deviation of 12.78 in their sample. With respect to reliability, in a recent study the total hardiness score yielded a reliability coefficient of .75 (Maddi, 2016). Coefficient alphas in the current study were comparable, values calculated in the high .70s.

Exploratory bi-factor analyses. For the actual bi-factor EFA analyses, as reported above, the "elbow rule" and parallel analyses were used to configure the number of factors for the models. From the scree plot, it appeared that four factors existed whereas the parallel analysis indicated eight possible factors existed. As these indicators did not match, both models were examined, and the model with the simplest solution and adequate fit indices was selected. Consequently, the four-factor model was used for the following analyses.

Additionally, as reported above, items loading at .30 or higher were identified as being related to a factor. Items were allowed to load onto both a general factor and specific sub-factor.

Moreover, items that did not load onto the general factor were removed from the model and observed separately. Table 2 depicts the factor loadings for the bi-factor EFA analysis, while Table 3 depicts the items that loaded onto the general factor and the respective factor loadings for these items. PVS III-R items 2, 5, 8, 13, and 16 were the only ones to not load onto the general factor (see Table 4 for these items and their respective factor loading data). The PIL-SF was the only measure whose items did not cross load onto another factor, as the PIL-SF completely loaded onto the general factor. Four items from the MLQ-P (items 1, 4, 5, 6), one item from the RS-14 (item 13), and seven items from the PVS III-R (items 1, 3, 6, 9, 11, 14, and 17) were other items that also did not cross load. The 30 remaining items cross loaded with the general factor and another factor.

Beyond the general factor, three other factors were found from the bi-factor EFA. One factor contains 13 of the 14 RS-14 items (see Table 5 for these items and their respective factor loading data), while the other factor contains all six items of the BRS (see Table 6 for these items and their factor loading data). The last factor of the bi-factor EFA contains PVS III-R items 4, 7, 10, 12, 15, 18 and MLQ-P item 9 (see Table 7 for these items and their factor loading data).

Following the bi-factor EFA, goodness of fit was assessed. The RMSEA was calculated to be .054 (with a 90% confidence interval ranging from a low of .050 to a high of .055), indicating acceptable model fit. The SRMR was calculated to be .04, which again indicates acceptable model fit. Following these absolute fit indices, relative fit indices were also examined. Specifically, the TLI was calculated to be .88 and the CFI was calculated to be .90. The TLI and CFI consequently indicated a poor fit as these values were below .95 (Hu & Bentler, 1999). The omega hierarchical for the general factor was calculated to be .75. As for the sub-factors, the omega hierarchical for the factor containing BRS items was calculated to be .75, while the

omega hierarchical value for the factor comprised primarily of RS-14 items was calculated to be .60. Finally, with regard for the third sub-factor, which contained the negatively valenced items from the PVS III-R and the MLQ-P, the omega hierarchical value was calculated to be .22.

Confirmatory bi-factor demographics. In all, data from 804 participants (595 from the Midwestern university and 209 from the Southern university) were used to complete the bi-factor CFA (see Figure 2 for a review of the data cleaning process for both samples). The mean age of the bi-factor CFA sample was 19.44 (*SD* = 2.8). With regard to gender, 65.55% of the sample reported being female, 33.96% reported being male, and .49% did not endorse either gender. The most prominent ethnicity represented in the bi-factor CFA samples was White (81.09%), followed by Black (7.46%), Asian (3.48%), Hispanic (3.11%), Native American (.50%), and Pacific Islander (.12%). Small percentages of participants identified as "Multiple" ethnicities (2.36%), "Other" ethnicities (.88%), or they opted to not disclose this information (1.00%). The sample was predominantly freshmen (65.05%), followed by sophomores (19.15%), juniors (9.70%), seniors (5.60%), and graduate students (.25%). A small percentage did not identify a classification (.25%).

*Confirmatory bi-factor measure descriptives***.** Table 8 depicts descriptive data (e.g., means, standard deviations, and Cronbach's alphas) for the measure items and totals by sample (based on data from respondents included in the overall bi-factor CFA, as a group but also considering whether respondents were from the Southern university or the Midwestern university). Concerning the MLQ-P, items and totals were similar by sample (overall bi-factor CFA *M* = 26.16, *SD* = 5.97; Southern university *M* = 26.99, *SD* = 5.49; Midwestern university *M* = 25.86, *SD* = 6.10). Overall, respondents reported high presence of meaning in life. The calculated means and standard deviations are consistent with those reported by Park and Jeong

(2016; *M* = 24.36, *SD* = 6.28). Internal consistencies in the samples ranged from the high .80s to low .90s, which is also consistent with the available literature (Park, 2010a; Park & Jeong, 2016; Schulenberg et al., 2011; Steger et al., 2006; Steger & Kashdan, 2007).

For PIL-SF scores, range from 4 to 28, with lower scores representing lower perceived meaning in life and higher representing greater perceived meaning in life (Schulenberg et al., 2011; Schulenberg et al., 2016). The means of the current samples (overall bi-factor CFA *M* = 22.44, *SD* = 3.86; Southern university *M* = 23.36, *SD* = 3.71; Midwestern university *M* = 22.12, *SD* = 3.87) were similar to those observed in other college student samples (*M* = 23.33, *SD* = 3.06; Schnetzer et al., 2013). With regards to internal consistency, PIL-SF scores often yield coefficient alphas in the .80s (Aiena et al., 2016; Peter et al., 2016; Schnetzer et al., 2013; Schulenberg et al., 2011; Schulenberg et al., 2016; Wang et al., 2016). The calculated coefficients based on the current data are congruent with the available literature.

For RS-14 scores, samples reported moderate resilience. The means of the current samples (overall bi-factor CFA *M* = 79.02, *SD* = 14.00; Southern university *M* = 80.57, *SD* = 11.91; Midwestern university *M* = 78.48, *SD* = 14.63) were higher compared to those observed in a recent college student sample (*M* = 74.88, *SD* = 17.05; Aiena et al., 2015). With regards to internal consistency, RS-14 scores tend to yield coefficient alphas in the mid .90s (Wagnild, 2015), which is consistent with the data obtained in the current study.

For the bi-factor CFA samples, whether considered in total or by institution, BRS reported were within the normal resilience range. Sample means were slightly lower (overall bi-factor CFA *M* = 3.36, *SD* = 0.78; Southern university *M* = 3.37, *SD* = 0.75; Midwestern university *M* = 3.35, *SD* = 0.79) than the mean and standard deviation observed in a recent study (*M* = 3.68, *SD* = .71; Shakespeare-Finch & Daley, 2017). Internal consistency reliability of BRS

scores tend to range from the .80s to the low .90s (Shakespeare-Finch & Daley, 2017; Smith et al., 2008). These values are comparable to calculations based on the current data.

As for the PVS III-R, similar scores were calculated by sample (overall bi-factor CFA *M* = 34.58, *SD* = 6.85; Southern university *M* = 33.92, *SD* = 6.22; Midwestern university *M* = 34.82, *SD* = 7.04). Moreover, these data were similar to figures calculated from a recent sample obtained by Abdollahi and colleagues (2014). These authors observed a mean of 31.21 and a standard deviation of 12.78 in their sample. With respect to reliability, in a recent study the total hardiness score yielded a reliability coefficient of .75 (Maddi, 2016). Coefficient alphas in the current study were comparable (calculated in the mid to high .70s).

Confirmatory bi-factor analyses. Based on the results of the bi-factor EFA, the bi-factor CFA general factor included all items from the MLQ-P, all items from the PIL-SF, all items from the RS-14, all items from the BRS, as well as items 1, 3, 4, 6, 7, 9, 10, 11, 12, 14, 15, 17, and 18 from the PVS III-R. Another factor created was the BRS resilience factor, which included the six BRS items. An additional factor was the RS-14 resilience factor, which consisted of RS-14 items 1-12 and 14. Also, a third factor was cultivated from the EFA results, one that included items from the PVS III-R (items 4, 7, 10, 12, 15, and 18) and one item from the MLQ-P (item 9). These items were negative in nature, requiring reverse coding (scoring).

Following the bi-factor CFA, goodness of fit was assessed. RMSEA was calculated to be .064 (90% confidence interval with a low of .062 and a high of .066), indicating acceptable model fit. SRMR was calculated to be .059, which is also suggestive of acceptable model fit. Following these absolute fit indices, relative fit indices were also examined. Specifically, the TLI was calculated to be .87 and the CFI was calculated to be .88. These values suggest a poor fit. The reliability of the factors was then assessed. The omega hierarchical for the general factor

was calculated to be .75. As for the sub-factors, the omega hierarchical for the factor containing BRS items was calculated to be .76, while the omega hierarchical value for the factor comprised primarily of RS-14 items was calculated to be .52. Finally, with regard for the third sub-factor, which contained the negatively valenced items from the PVS III-R and the MLQ-P, the omega hierarchical value was calculated to be .26.

IV. DISCUSSION

Purpose of the Study and Findings. Overall, ambiguity persists with respect to how best to define, delineate, and measure constructs such as meaning in life, resilience, and hardiness (Aburn et al., 2016; Bartone, 2006; Herrman et al., 2011; Wagnild, 2009a; Weathers et al., 2016; Windle et al., 2011; Wong & Wong, 2012). Greater scientific clarity with regard to how these constructs are related is imperative as all three constructs are correlated or predict adaptive psychological functioning following a stressor (e.g., Arnetz et al., 2013; Hasel et al., 2011; Maddi, 1999; Schulenberg et al., 2008; Tugade & Fredrickson, 2004; Weathers et al., 2016). Consequently, more precise research can lead to effective treatments that bolster adaptation following an adverse event.

In this study, it was hypothesized that items from two meaning in life measures (the MLQ-P and the PIL-SF), two resilience measures (the RS-14 and the BRS), and one hardiness measure (the PVS III-R) would load onto a general factor and some items from these self-report measures would also load onto other sub-factors. These hypotheses were formulated as there is clear theoretical overlap between meaning in life, resilience, and hardiness, but ambiguity persists with regard to how much overlap these constructs possess (Bartone, 2006; Herrman et al., 2011; Wagnild, 2009a; Weathers et al., 2016; Wong & Wong, 2012). A hypothesis that allowed for unidimensionality and multidimensionality was important given the contrasting theories within the respective fields of study.

A very large sample, comprised of two smaller samples from different geographic locations, was collected for the current study. Data from one sample were collected at a Midwestern university and data from another sample were collected from a university in the Southern United States. Following data cleaning procedures for both samples, half of the data from the Midwestern university and half the data from the Southern university were randomly chosen to be used for the bi-factor EFA. The remaining data from both universities were used for the bi-factor CFA. Bi-factor EFA and CFA were used as these types of analyses test for both unidimensionality and multidimensionality. Again, as there is lack of consensus with regards to how much overlap exists between meaning in life, resilience, and hardiness, analyses that allowed items from all measures to load onto a general factor and other sub-factors were essential.

Hypothesis one, which stated that all items from the MLQ-P, the PIL-SF, the BRS, the RS-14, and the PVS III-R would load onto a general factor, was partially supported. More specifically, all items from the meaning in life measures, all items from the resilience measures, and 13 out of the 18 items from the hardiness measure, a total of 42 items, loaded onto the general factor. Five items from the PVS III-R (items 2, 5, 8, 13, and 16) did not load onto the general factor and were removed from the model and observed separately.

Hypothesis two stated that multidimensionality would appear in the bi-factor EFA. More specifically, it was hypothesized that some items from the measures would not only load onto the general factor, but also that the meaning in life items from the MLQ-P and the PIL-SF would create a meaning in life sub-factor, the resilience items from the BRS and the RS-14 would create a resilience sub-factor, and the hardiness items from the PVS III-R would create a hardiness sub-factor (see Figure 1). However, this specific hypothesized multidimensionality

pattern was not supported. The three multidimensional factors were observed within the model, but the sub-factors were not meaning in life, resilience, and hardiness. Instead, all six items from the BRS created one sub-factor, 13 out of the 14 items that comprise the RS-14 created another sub-factor, and six of the 18 PVS III-R items and one out of five MLQ-P items created a third sub-factor. For the purpose of this study, the factors were titled the BRS Sub-factor, the RS-14 Sub-factor, and the Hardiness Sub-factor, respectively. All items from the MLQ-P and the PIL-SF loaded onto the general factor and did not create a meaning in life sub-factor.

General Factor. In all, 42 items loaded onto the general factor. These items included all five MLQ-P items, all four PIL-SF items, all 14 items from the RS-14, all six items from the BRS, and 13 out of the 18 items from the PVS III-R. As all items from the meaning in life and resilience measures loaded onto the general factor it was important to distinguish if the general factor was meaning in life, resilience, or another construct that is a combination of the two. A review of the literature regarding the relationship between resilience and meaning in life will be revisited below to demonstrate that this general factor is more likely to be global resilience, which comprises of many factors including meaning in life.

As reported above, there is a plethora of operational definitions for both meaning in life and resilience and no one operational definition is the gold standard to use in research. However, most researchers define meaning in life as the degree to which people have achieved a sense of coherence, direction, or purpose in their lives (e.g., Aiena et al., 2016; Lomas, Hefferon, & Ivtzan, 2014; Steger et al., 2013). Resilience has been defined as the capacity to adapt and return to one's pre-adversity level of functioning following a stressor (Bonanno, 2004; Wagnild & Young, 1993). According to Wagnild (2009a) and Southwick and Charney (2018) a core facet or factor of resilience is meaning in life.

When a person experiences a stressor, this may call into question their direction or purpose in life. During this time, they may experience the need for meaning making and thus search for meaning in life (Park, 2010a, 2016; Schulenberg et al., 2014; Steger et al., 2008). Search for meaning in turn can ameliorate discrepancies between global and specific meanings and decrease overall psychological distress (Park, 2010b). Meaning making thus stimulates the process of resilience and perhaps even posttraumatic growth (Weathers et al., 2016). Consequently, if the general factor were conceived as global resilience, it would make sense that all of the meaning items would share significant variance with the general factor, as meaning in life is critical for resilience to occur. Stated simply, meaning in life is a vital resource to be resilient following a stressor (Aiena et al., 2016; Baczwaski et al., 2012; Frankl, 1959/2006; Weathers et al., 2016; Wong, 2010). Meaning in life may give a person a purpose or drive to overcome the event or allow them makes sense of the event and thus recover. To emphasize this point, Frankl would often quote Nietzsche to demonstrate the importance of meaning in life: "He who has a why to live can bear with almost any how" (Frankl, 1959/2006, p. 76). When examined this way, meaning appears to be an essential pathway to resilience. The perception of meaning in life allows one to make sense of a stressful event and achieve significance, and purpose.

However, it is important to note that only presence of meaning in life was assessed in the current study and not search for meaning in life. Thus, there may be some components of meaning in life, such as search for meaning, which may create a specific sub-factor within this model or completely load onto the general factor. If a person is searching for meaning and is struggling to make sense of a stressor and their place in the world, they may experience maladaptive outcomes rather than resilient outcomes. Again, search for meaning in life has been

correlated with maladaptive and adaptive outcomes in contrast to presence of meaning in life, which has consistently been related to adaptive outcomes (Dezutter et al., 2013; Dezutter et al., 2014; Linley & Joseph, 2011; Reker, 2000; Schulenberg et al., 2014; Steger et al., 2008). Additionally, Bonanno and colleagues (2015) postulated that resilience should be used as an umbrella term that comprises several characteristics that correlate or predict resilient outcomes following a stressor. Therefore, meaning in life and hardiness may be two characteristics that fit under this larger construct umbrella. This is in line with some theories that suggest that both hardiness and meaning in life are pathways to resilience (Aiena et al., 2016; Bartone, 2006; Bonanno, 2004; Maddi, 2013; Wong & Wong, 2012). From this standpoint, it is plausible that the general factor found in this study is most likely global resilience and meaning in life and hardiness are vital characteristics that can predict adaptive functioning following an adverse event.

BRS and RS-14 Sub-factors. The RS-14 Sub-factor was comprised of 13 of the 14 RS-14 items. The BRS Sub-factor consisted of all six BRS items. As the general factor was conceptualized as global resilience, it is interesting that two of the three sub-factors observed in the model involved the two resilience measures used in the current study. The RS-14 and BRS measures claim to measure one-construct, resilience, but use two different operational definitions. These measures likely assess different components of the larger resilience concept. The differing operational definitions of the measures may explain why these measures create two sub-factors rather than one. The occurrence of these two sub-factors could illustrate the lack of clarity and imprecision that exists within the resilience literature or simply that these measures were designed differently. Ultimately, researchers may think they are using the same construct, but may examining difference aspects of the same concept.

To better understand how these items loaded onto the general factor and also created multidimensionality, a different example that uses a bi-factor structure, overall general ability, will be briefly explored below (Cucina & Byle, 2017). Within intelligence testing, the general factor is overall general mental ability. The multidimensionality factors within general mental ability include working memory, processing speed, perceptual reasoning, and verbal comprehension. Ultimately, working memory, processing speed, perceptual reasoning, and verbal comprehension are their own distinct domains that measure specific abilities. However, these distinct abilities can also be used to comprise overall intelligence.

Consequently, in the current study, the BRS and RS-14 are factors that comprise resilience, but are also measuring distinct factors that can be examined independent of the general resilience factor. If one takes the stance that resilience is an umbrella term (Bonanno et al., 2015) and thus resilience encapsulates numerous facets and characteristics, it makes sense that the general factor of resilience would have facets that are also stand-alone constructs. Accordingly, the BRS (Smith et al., 2008) could be measuring bouncing back behavior in general and with relation to overall resilience outcomes. Likewise, the RS-14 (Wagnild, 2009b) measures five facets or protective resources that facilitate resilience. The RS-14 could be measuring these five facets (meaning/purposeful life, perseverance, equanimity, self-reliance, and existential aloneness) in general as its own facet and also with relation to overall resilience. What these two factors could be measuring is explored further below.

As reported above, both the BRS and RS-14 use two different operational definitions for resilience; which could be part of the reason they create two separate factors. For example, the BRS (Smith et al., 2008) focuses on the action of bouncing back from a stressor. The BRS thus measures whether a person perceives that he or she was able to adapt and bounce back following

a stressful event. Historically, resilience measures have quantified what protective factors a person may or may not possess that facilitate adaptation following a stressor. Thus, the BRS is different from past resilience measures as this measure specifically examines the act of bouncing back. The measure is not examining protective resources that can facilitate resilience. As a result of this conceptualization, the BRS incorporates concrete questions asking about reactions to stress. To further illustrate using actual items, item 1 of the BRS is "I tend to bounce back quickly after hard times," item 2 is "I have a hard time making it through stressful events," and item 3 is "It does not take me long to recover from a stressful event." Accordingly, bouncing back behaviors, as measured by the BRS, can be a characteristic of resilience, but could be characteristic of a stand-alone capacity. Going back to the intelligence-testing example (Cucina & Byle, 2017), the BRS is one facet that comprises overall resilience just like working memory is one facet that comprises overall intelligence. However, working memory and the BRS are examining one specific domain or capability of the overall general factor they comprise. Thus, the BRS is measuring a component of overall resilience, but is also a stand-alone factor that can be examined and observed separately from overall resilience.

The RS-14 (Wagnild, 2009b) instead measures five protective factors that comprise resilience: perseverance, equanimity, meaningfulness, self-reliance, and existential aloneness. More specifically, the RS-14 measures five protective factors that facilitate resilience outcomes. Examples of RS-14 items include item 4 "I am friends with myself," item 10 "I can usually find things to laugh about," and item 12 "In an emergency, I'm someone people can generally rely on." The protective resources that comprise the RS-14 can facilitate resilience, evidenced by these items loading onto the general factor, but the occurrence of the RS-14 Sub-factor also demonstrates that the RS-14 is a characteristic of overall resilience. Going back to the

intelligence example detailed above (Cucina & Byle, 2017), it may be that the RS-14 can be used to examine overall resilience, but also encapsulates a sub-factor that examines protective resources that predict resilience. Using the example of intelligence, this would mean that just as a clinician may want to examine overall intelligence, they may also want to examine a specific domain of functioning such as working memory independently. The RS-14 can be used to examine overall resilience, but can also be examined separately for its protective resources that facilitate resilience.

Overall, the BRS and RS-14 Sub-factors may have occurred within the model as a result of these measures using two different operational definitions. However, within the RS-14, there are items that appear to be measuring bouncing back behavior. More specifically, within the RS-14, items 7 ("I can get through difficult times because I've experienced difficulty before"), 11 ("My belief in myself gets me through hard times"), 12 ("In an emergency, I'm someone people can generally rely on"), and 14 ("When I'm in a difficult situation, I can usually find my way out of it") are items that explicitly reference difficult times/hard times/emergency situations and coping with these events, which is similar to items from the BRS. However, even these items did not load onto the BRS Sub-factor.

One reason that these items did not load onto the BRS Sub-factor could be because items 7, 12, and 14 are three of the five items that comprise the self-reliance facet of the RS-14. Item 11 is one of the two items of the measure that create the facet of existential aloneness. Consequently, the RS-14 items appear to be measuring bouncing back behavior following a stressor, but these items were created to measure self-reliance or existential aloneness. The BRS does not have specific facets nor does the measure examine protective resources. The aim of the BRS was not to examine self-reliance and existential aloneness like the RS-14.

Moreover, the BRS and RS-14 may have created two different sub-factors because of participant responding. More specifically, participants may have responded differently to the measures. Again, Vanderbilt-Adriance and Shaw (2008; Windle et al., 2011) indicated that resilience rates fluctuate from 25-84% depending on the study. Consequently it could be that researchers are measuring different constructs or that different survey items may create different response sets. The BRS is a six-item measure that uses a five-point Likert-type scale where *1* represents *Strongly Disagree* and *5* represents *Strongly Agree* (Smith et al., 2008). The RS-14 instead is a 14-item measure that uses a 1-7 Likert-type scale where *1* represents *Strongly Disagree* and *7* represents *Strongly Agree* (Smith et al., 2008). These measures are based on different operational definitions and differ with regards to how many items respondents answer. These differences may result in different responses from participants.

Switching gears to examining the RS-14 Sub-factor specifically, most items from the RS-14, with the exception of item 13 ("My life has meaning"), loaded onto the RS-14 Sub-factor. Within the RS-14, items 2, 9, and 13 comprise the meaning/purpose in life facet (Wagnild, 2009a). Although items 2 ("I feel proud that I have accomplished things in life") and 9 ("I keep interested in things") from the RS-14 are also measuring facets of meaning in life, they do not explicitly ask participants if they perceive their life has meaning. Only item 13 ("My life has meaning") from the RS-14 asks participants to rate how much they agree or disagree that their life has meaning. All five of the MLQ-P items and all of the PIL-SF items loaded into the general factor and did not demonstrate multidimensionality. Item 13 from the RS-14, like most of the MLQ-P items and all of the PIL-SF items, loaded onto the general factor and no other sub-factor. Interestingly, the other two meaning questions from the RS-14, items 2 and 9, loaded not only onto the general factor, but also the RS-14 Sub-factor. It may be that these items were not as

overtly examining perceived meaning in life as item 13 did. More specifically, items 2 and 9 refer to being proud of accomplishments or aspects of life holding interest.

Hardiness Sub-factor. The fourth sub-factor observed within the model consisted of six questions from the PVS III-R and one item from the MLQ-P. This fourth factor consisted of PVS III-R item 4 ("I am not equipped to handle the unexpected problems of life"), item 7 ("No matter how hard I try, my efforts usually accomplish little"), item 10 ("Thinking of yourself as a free person just leads to frustration"), item 12 ("My mistakes are usually very difficult to correct"), item 15 ("Lots of times, I really don't know my own mind"), item 18 ("It's hard to imagine anyone getting excited about working") and item 9 from the MLQ-P ("My life has no clear purpose"). A review of the hardiness and meaning in life literature is reviewed below to theorize why these items may have created this factor.

Both hardiness and meaning in life are from the existential psychology literature (e.g., Binswanger, 1963; Frankl, 1959/2006; Kierkegaard, 1954; Maddi, 1970, 2004, 2013; May, 1950; Sartre, 1956). Hardiness is based on the idea that people want to perceive meaning in life and those who are hardy will have the courage to search for meaning in life. People who are hardy tend to adapt following a stressor because they have the courage to search for meaning, to look toward the future, even when there is uncertainty. Thus, theoretically, hardiness relies on the use of search for meaning in life to ultimately adapt following a stressor. As discussed previously, search for meaning in life is the motivation to make sense of one's world and one's self (Steger et al., 2006). Courage to search for meaning in life and hardiness are thus theoretically tied together. As a result, this sub-factor could be measuring the courage to actively search for meaning in life. As this is the definition of hardiness, this factor was conceptualized as the Hardiness Sub-factor. As indicated above, presence of meaning in life is a core component to

facilitate resilience. However, search for meaning, as opposed to presence of meaning, can lead to maladaptive and adaptive outcomes depending on a person's ability to discover a sense of meaning and/or purpose following an event (Dezutter et al., 2013; Dezutter et al., 2014; Linley & Joseph, 2011; Reker, 2000; Schulenberg et al., 2014; Steger et al., 2008). Consequently, these items load onto the general factor of global resilience, which demonstrates that the courage to search for meaning or strive for hardiness can lead to adaptation. However, as these items also created a sub-factor, it is likely this is one characteristic or pathway toward resilient outcomes.

One reason this sub-factor was created could be due to the adaptive and maladaptive nature of search for meaning can be adaptive or maladaptive (Dezutter et al., 2013; Dezutter et al., 2014; Linley & Joseph, 2011; Reker, 2000; Schulenberg et al., 2014; Steger et al., 2008). If a person is trying to make sense of an traumatic event and find a purpose or reason to recover and they succeed, they are more likely to experience adaptive outcomes such as resilience. Conversely, if a person is searching to find meaning in a traumatic event and ultimately cannot make sense of the event; they may experience maladaptive outcomes. To further reiterate, two people could be impacted by a natural disaster. If both people previously thought that good things happen to good people and nothing bad could happen to them, their sense of safety in the world is called into question (Park, 2016). If one of these individuals is able to find meaning in the event, such as seeing the event as part of living in that particular area and finds a sense of purpose in working with their community to re-build, that person is likely to cope adaptively following the event. Conversely, if the other person who experienced the disaster left the event thinking that the world is senseless and no matter what, bad things will happen, they are less likely to adapt following the event.

Taken together, the items from this sub-factor could be examining the motivation to search for meaning in life. Many of the items refer to the perception that difficult events cannot be handled, the perception that a person does not feel accomplished from his or her efforts, and the perception that a person has a clear life purpose. These items could consequently be measuring cognitions related to searching for meaning in life and experiencing difficulties finding this meaning. Again, meaning making and search for meaning in life can facilitate adaptation (e.g., Park, 2010b), however, search for meaning can also occur independent of resilience depending on whether a person is able to make sense of the stressor and discern purpose and meaning. Consequently, it makes sense that these items also demonstrated multidimensionality given the nature of search for meaning.

Items That Did Not Load Onto the General Factor. As stated above, items that did not load onto the general factor were removed from the model and observed separately. Five items from the PVS III-R, items 2 ("I don't like to make changes in my everyday schedule"), 5 ("Most of what happens in life is just meant to be"), 8 ("I like a lot of variety in my work"), 13 ("It bothers me when my daily routine gets interrupted"), and 16 ("Changes in routine provoke me to learn") did not load onto the general factor. Item 8 specially references preferring variety in work, and items 2, 13, and 16 reference the ability to adapt when one's routine or schedule is disrupted. As indicated above, the PVS was originally developed within a business environment (Kobasa et al., 1982). Due to the business context in which it was developed, it follows that items from the PVS III-R would include a focus as to views of work and routine. Overall, items 2, 8, 13, and 16 are centered on a work environment context and college students may respond differently to these items as compared to people who have completed school and established

careers. College students are often emerging adults who may work part-time, but more than likely have not established careers or worked long-term in the workforce.

Moreover, it is important to note that the other measures in the current study were not developed in a work environment and items in the other measures do not specifically reference ability to manage work schedules. Both meaning measures used in the current study, the PIL-SF (Schulenberg et al., 2011) and the MLQ-P (Steger et al., 2006), were developed using undergraduate participants. Moreover, the PIL-SF was developed after 50 years of research on the PIL in diverse settings. The RS-14 (Wagnild, 2009b) was developed using an older adult sample and the BRS (Smith et al., 2008) was developed using four groups, including undergraduates, patients in cardiac rehabilitation, and women who were either healthy controls or had fibromyalgia. In contrast, the PVS III-R was developed in a business environment and required various revisions to function in different contexts.

More specifically, the PVS III-R has a history of the three C facets (commitment, control, and challenge) not being consistently observed in undergraduate samples (Funk & Houston, 1987; Hull et al., 1987; Maddi, 2006). In contrast, the three C's have been observed consistently with adult samples in business settings (Maddi, 2006; Maddi & Kobasa, 1984). The original PVS went through several revisions in order to expand its utility in different contexts (Maddi, 2002, 2006; Maddi & Khoshaba, 2001). Consequently, considering the samples obtained for the present study, perhaps some of these items are not functioning as the creators of the PVS III-R intended. Although Maddi and colleagues developed several research studies to examine and bolster the psychometrics of the PVS III-R (Maddi, 2002, 2006; Maddi & Khoshaba, 2001), it may be that the business context in which the items were developed explain the non-loadings observed in the current college student samples.

However, items 1 (“By working hard, you can always achieve your goal”), 3 (“I really look forward to my work”), and 18 (“It’s hard to imagine anyone getting excited about working”) from the PVS III-R loaded onto the general factor and reference work. Yet, these items are vague in nature and revolve around ideals that are instilled throughout grade school and beyond. Students are encouraged to believe that if they work hard and study, they can succeed in coursework and eventually obtain a job. Moreover, some of the students in the samples may be taking courses in their major area of study and look forward to completing coursework in these classes. However, they may not be at the stage where variable work routines or liking variety in their work may relate to them. Consequently, the students in this study may not have readily identified with these items and therefore these hardiness items did not load onto the general factor as hypothesized.

Unfortunately, as the researcher was unable to obtain the scoring data from the Hardiness Institute, the current study did not observe and quantify which items of the PVS III-R comprise the three C facets. As a result, the researcher was unable to observe whether items 2, 8, 13, and 16 belong to one particular facet and whether these responses observed are typical in college students. Additionally, item 5 (“Most of what happens in life is just meant to be”) also did not load onto the general factor and this item is not work related. This item instead is transcendental in nature and student respondents may have been uncertain how best to respond to this item. More research is needed to assess how the respondents viewed the items that did not load onto the general factor. However, what is known about the PVS is that the measure has required several revisions to function in non-business environments.

Ultimately these items were not supported to measure global resilience and thus were not included in the bi-factor EFA and CFA. More research is needed to better understand whether

these items did not load onto the general factor as these questions are problematic in the current samples, or whether these items are simply not measuring the overall general factor of global resilience. What is apparent about these items is that they did not load onto the general factor like the other PVS III-R items did. Thus, they were not useful to the subsequent analyses.

Limitations and Directions for Research. Over 60 different measures of meaning in life exist (Brandstätter et al., 2012; Park & George, 2013), over 15 self-report resilience measures exist (Windle et al., 2011), and two hardiness measures are widely used in the literature, the PVS III-R (Maddi et al., 2006**)** and the Dispositional Resilience Scale (Bartone, 1989, 1991). Logistically speaking, it would not be feasible to conduct a study that uses every known meaning in life, resilience, and hardiness measure, but a limitation of the current study is that more measures, such as the measures specified below, were not used in the current study.

Consequently, one weakness of the current study is that only one hardiness measure was used. Originally, this was done as the Dispositional Resilience Scale seemed to be too ambiguous with regard to whether or not it was a hardiness measure or a resilience measure. "Pure" hardiness measures were wanted for the current study to differentiate hardiness from resilience and meaning in life. The PVS III-R was solely used to assess hardiness as it is the only "pure" hardiness measure that is widely used in research today. Consequently, in future studies, it would be beneficial for researchers to include another hardiness measure, such as the Dispositional Resilience Scale (Bartone, 1989, 1991) or the Kobasa Hardiness Scale (Kobasa, 1979b), even though this latter scale is not widely used. More specifically, it would be interesting and informative to see how items from the Dispositional Resilience Scale and the Hardiness Scale present in the model. Not all items from the PVS III-R (e.g., items 2 "I don't like to make changes in my everyday schedule," 5 "Most of what happens in life is just meant to be," 8 "I like

a lot of variety in my work," 13 "It bothers me when my daily routine gets interrupted," and 16 "Changes in routine provoke me to learn") loaded onto the general factor. Future research could explore which of the Dispositional Resilience Scale and Hardiness Scale items load onto the general factor. Moreover, future researchers could examine whether the items in these scales completely load onto the general factor and do not demonstrate multidimensionality like most of the MLQ-P items, the PIL-SF items, and item 13 of the RS-14 ("My life has meaning"). Along these lines, it would be interesting to see whether these items created another sub-factor or whether they loaded onto the Hardiness Sub-factor that contained six items from the PVS III-R and one item from the MLQ-P. Ultimately, including the Dispositional Resilience Scale and the Hardiness Scale would allow researchers to examine the relationship between hardiness, resilience, and meaning in life from a more robust view as the current study only used one measure of hardiness.

Another limitation of the current study, one relating to hardiness, is that the researcher did not submit the PVS III-R data collected from both samples to the Hardiness Institute. The Hardiness Institute is the only agency that has the scoring algorithm for the PVS III-R. The Institute charges researchers to analyze PVS III-R data. They do not disclose how the measure is scored or what items constitute the three facets of hardiness. Consequently, the full meaning of the scores, individually and collectively in terms of the three C's of hardiness (commitment, control, and challenge), is beyond the scope of the current study. As the PVS III-R did not completely load onto the general factor, more specifically items 2, 5, 8, 13, and 16 did not load onto the general factor, it would be useful for future research to assess whether the items that did not load onto the general factor were items from one or more hardiness facets assessed by the PVS III-R.

An additional limitation to this study relates to the concept of meaning. This study only examined presence of meaning and did not use the search for meaning facet from the MLQ (Steger et al., 2006). Search for meaning is the motivation to discover meaning. The search for meaning in life facet from the MLQ was not used in the current study as search for meaning can be both adaptive and maladaptive, whereas presence of meaning is consistently associated with adaptive coping (Dezutter et al., 2013; Dezutter et al., 2014; Linley & Joseph, 2011; Reker, 2000; Schulenberg et al., 2014; Steger et al., 2008). Search for meaning in life can be maladaptive when someone cannot find meaning in a traumatic or adverse event. If one believes a traumatic or adverse event happened for no reason or was senseless, the individual is less likely to adapt positively as compared to someone who is able to make sense of the experience. When someone cannot find meaning or purpose following a major stressor, it may lead to maladaptive outcomes. Studies have found that those with high-presence, low-search tend to experience more adaptive outcomes, but those with low-presence, high-search still function better than those who are low-presence, low-search (Dezutter et al., 2014; Reker, 2000). Given the potential relevance and importance of the search for meaning concept, future research should incorporate search for meaning because it is adaptive in some situations. Moreover, search for meaning in life is also necessary to include in future studies, as hardiness is associated with the courage to search for meaning in life (Maddi, 2004). As a result, search for meaning items may load onto the Hardiness Sub-factor observed in the current study. Thus, it would be important to see how search for meaning in life items function in relation to hardiness items and the general factor of resilience.

As previously emphasized, over 60 different measures of meaning in life exist (Brandstätter et al., 2012; Park & George, 2013), however, just recently a new meaning in life

measure was developed by Zhang and colleagues (2018), with four dimensions of meaning with relevance to resilience outcomes. These dimensions of meaning include need for meaning, meaning confusion, meaning avoidance, and meaning anxiety. The researchers developed these four additional dimensions of meaning because they posited that some people are not concerned with finding meaning in life or have never seriously considered whether their lives have meaning. Thus, when these individuals are asked to rate how much meaning their lives have, they may be confused and unsure how best to respond. The potential roles of meaning avoidance and meaning anxiety moderating resilience outcomes may further support the hypothesis that meaning in life is a core facilitator of resilience, and thus why the current study found that meaning in life is not an independent factor from resilience.

Moreover, although the BRS and RS-14 are extensively used in the literature, other measures of resilience like the CD-RISC (Connor & Davidson, 2003) are also widely used in the resilience literature. As the overarching general factor was conceptualized as resilience, it would be useful to incorporate measures such as the CD-RISC in future research. More specifically, it would be informative to see whether the CD-RISC items not only load onto the general factor of global resilience, but also whether the items from this measure create multidimensionality. Would the items of the CD-RISC load onto the general factor like all of the BRS and RS-14 items? Would the CD-RISC create another multidimensional factor separate like the BRS and RS-14, or would it create a new sub-factor of its own? As the CD-RISC is based on the hardiness literature, it may load onto the Hardiness Sub-factor, which was comprised of six PVS III-R items, or create a different hardiness sub-factor of resilience. More research is necessary to examine these items within a bi-factor model study of meaning in life, resilience, and hardiness.

Along these lines, future research could also examine other constructs that relate to adaptation or growth following adversity. More specifically, one of the constructs that could be related is posttraumatic growth (Calhoun & Tedeschi, 1999, 2001). Posttraumatic growth is the positive psychological change or growth that some experience following an adverse event. Dursun and colleagues (2016) found that perceived social support and search for meaning predict posttraumatic growth outcomes. Moreover, Weathers and colleagues (2016) emphasized that theoretically, posttraumatic growth is tied to resilience and meaning in life as both resilience and meaning in life constructs bolster posttraumatic growth outcomes. Related to hardiness, Waysman, Schwarzwald, and Solomon (2001) found that hardiness is associated with positive change following traumatic events in Israeli Prisoners of War from the Yom Kippur War of 1973. Consequently, it would be interesting to see how items from the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996) would function within the bi-factor model. Would these items load onto the general global resilience factor? Would these items create a multidimensional factor that could be conceptualized as growth following an adverse event? Ultimately more research is needed to explore how such concepts as posttraumatic growth will function within this bi-factor model.

Another weakness of the current study is that no causal relationships could be determined from these data. As reported above, Bonanno and colleagues (2015) indicated that ambiguity exists within the resilience literature, as there is a lack of precision in the research. Specifically, it is logistically difficult for researchers to collect and examine data about psychological functioning before, during, and after a major stressor or traumatic event. These kinds of considerations could be carried over into research with resilience, meaning in life, and hardiness in order to observe how these constructs delineate or converge on measuring certain components

of adaptive coping. Moreover, with this type of research design, causal relationships between these variables could be better observed, informing to a greater degree how these constructs relate to one another. For example, it is uncertain if having meaning in life directly leads to global resilient outcomes, but researchers have supported that this is a crucial facet or pathway that predicts resilience (e.g., Aiena et al., 2016; Wong & Wong, 2012). As meaning in life predicts resilient outcomes, more researchers could examine if causality exists between these variables and consequently add more clarity and precision with regard to how these constructs are related.

Finally, this research is the first in a series of studies geared to examine the overlap between the concepts of resilience, meaning in life, and hardiness. Now that a general factor has been observed and conceptualized as global resilience, more research is needed to create a more cohesive operational definition of resilience that incorporates different aspects, such as meaning, hardiness, and possibly other variables. From this work, a more cohesive measure to quantify this resilience conceptualization could be created. Ultimately, the goal of this study was to begin the process of synthesizing these respective literatures. Meaning in life, resilience, and hardiness share enough variance to create a general factor (defined as global resilience for this paper). However, more work needs to be done to solidify the operational definition of resilience and determine the items that are necessary to properly measure this construct, all the while incorporating meaning in life and hardiness research.

Strengths and Implications. A strength of the current study is that the researcher was able to obtain two samples from two different geographic locations and also collect 804 participants to conduct the bi-factor EFA and 804 participants to conduct a bi-factor CFA. For factor-analytic research, it is important to obtain a large number of participants (Costello & Osborne, 2005).

Several researchers have theorized different rules for the amount of participants necessary to conduct these analyses (MacCallum, Widaman, Zhang, & Hong, 1999). The current sample surpassed the guidelines suggested by Everitt (1975; 470 participants per analysis), Gorsuch (1983; 235 participants per analysis), and Comrey and Lee (1992; 300 participants per factor analysis). Moreover, by collecting two samples and randomly assigning them to each bi-factor analysis, this added more variability to the overall sample and created more robust findings as more people, from different locations, participated in the current study.

Another strength of the current study is that it is one of the first studies to investigate construct overlap between meaning in life, resilience, and hardiness. This study found that there is enough shared variance between the meaning in life, resilience, and hardiness items used in the current study to establish the presence of a general factor. This general factor was conceptualized as global resilience. Overall, there have been several researchers who have studied how measures of meaning in life, resilience, and hardiness correlate (e.g., Aiena et al., 2015; Connor & Davidson, 2003; Smith et al., 2008; Viashnavi, Connor, & Davidson, 2007), but researchers have not examined whether these constructs share a common general factor. This study not only examined whether the general factor existed, but also supported the existence of this general factor. The existence of a general factor indicates that more research should investigate how to integrate constructs that relate to adapting to a stressor.

Essentially, researchers need to work towards parsimony within the literature. If one term, for this study that term was global resilience, could be used to describe adaptive functioning following a stressor rather than three or more terms, more effective research and communication could exist. With more valid and reliable definitions and measures, this in turn can lead to more effective clinical treatment for those who experience a major stressor and

struggle to return to pre-stressor functioning. As resilience, meaning in life, and hardiness constructs are positively correlated with adaptive outcomes for both mental and physical health following a wide range of stressors (e.g., Arnetz et al., 2013; Hasel et al., 2011; Maddi, 1999; Schulenberg et al., 2008; Tugade & Fredrickson, 2004; Weathers et al., 2016), it is essential to synthesize and create better clarity within this literature to inform future research studies and clinical practices.

Consequently, a strength of this study is that it is the first investigation where the aim was to create better clarity and consistency by exploring the overlap between these constructs. This study successfully examined these aims, a general factor conceptualized as global resilience was found and characteristics of resilience such as bouncing back behavior as measured by the BRS, protective factors as measured by the RS-14, and search for meaning/hardiness are separate factors that also facilitate resilience. Consequently, the general factor of global resilience is an umbrella term for the sub-factors. Now that a general factor has been observed and conceptualized as global resilience, more research is needed to establish a more cohesive operational definition and measure of resilience that incorporates other core components such as presence of meaning in life and sub-factors such as hardiness/search for meaning. Striving for scientific clarity is essential. Via new research, more will be learned about these constructs, how they relate to one another, and how they may be useful in advancing research and clinical treatment efforts.

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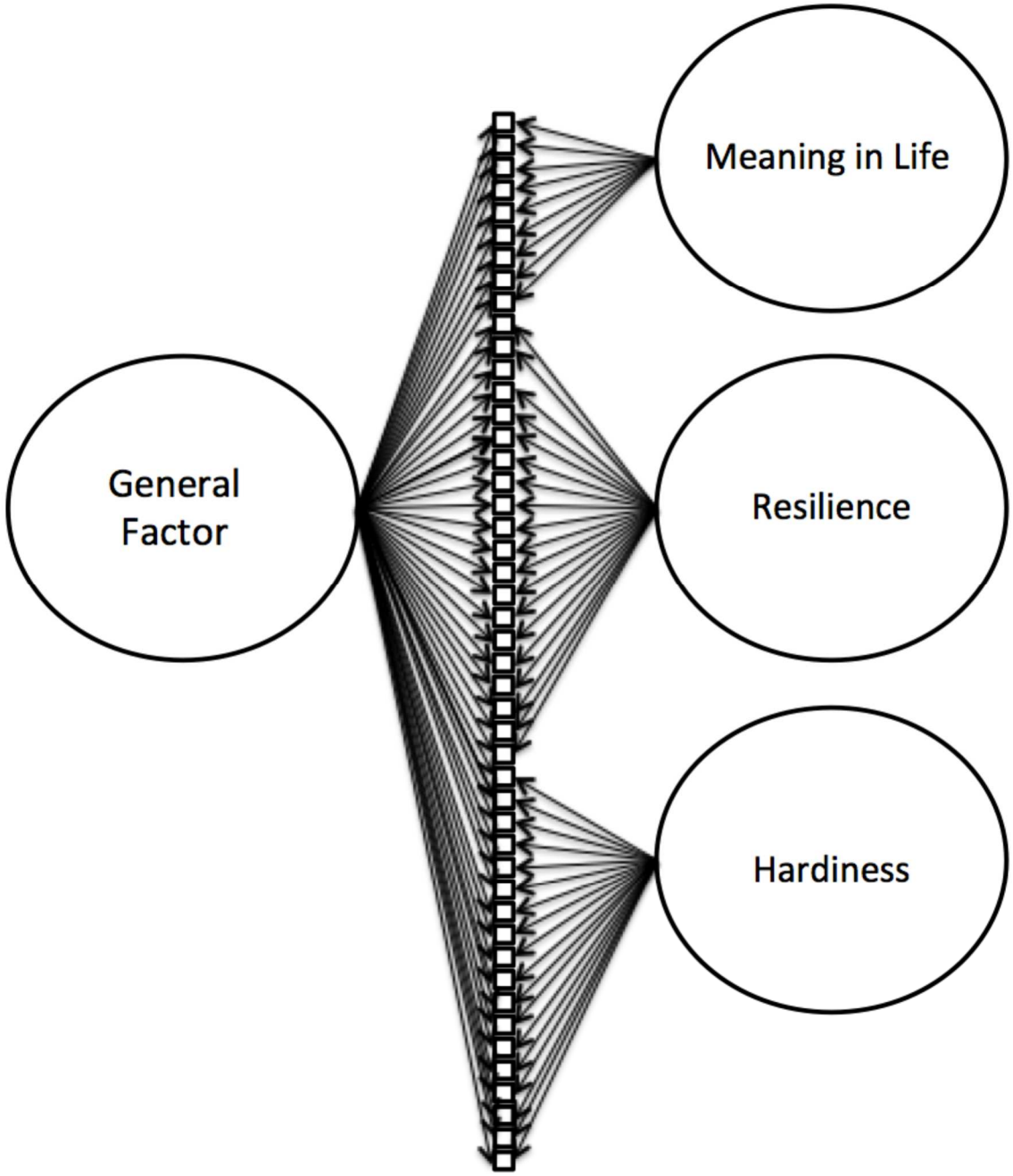
APPENDIX

APPENDIX 1: BI-FACTOR EFA MODEL OF THE HYPOTHESIZED GENERAL FACTOR AND SPECIFIC SUB-FACTORS OF MEANING IN LIFE, RESILIENCE, AND HARDINESS

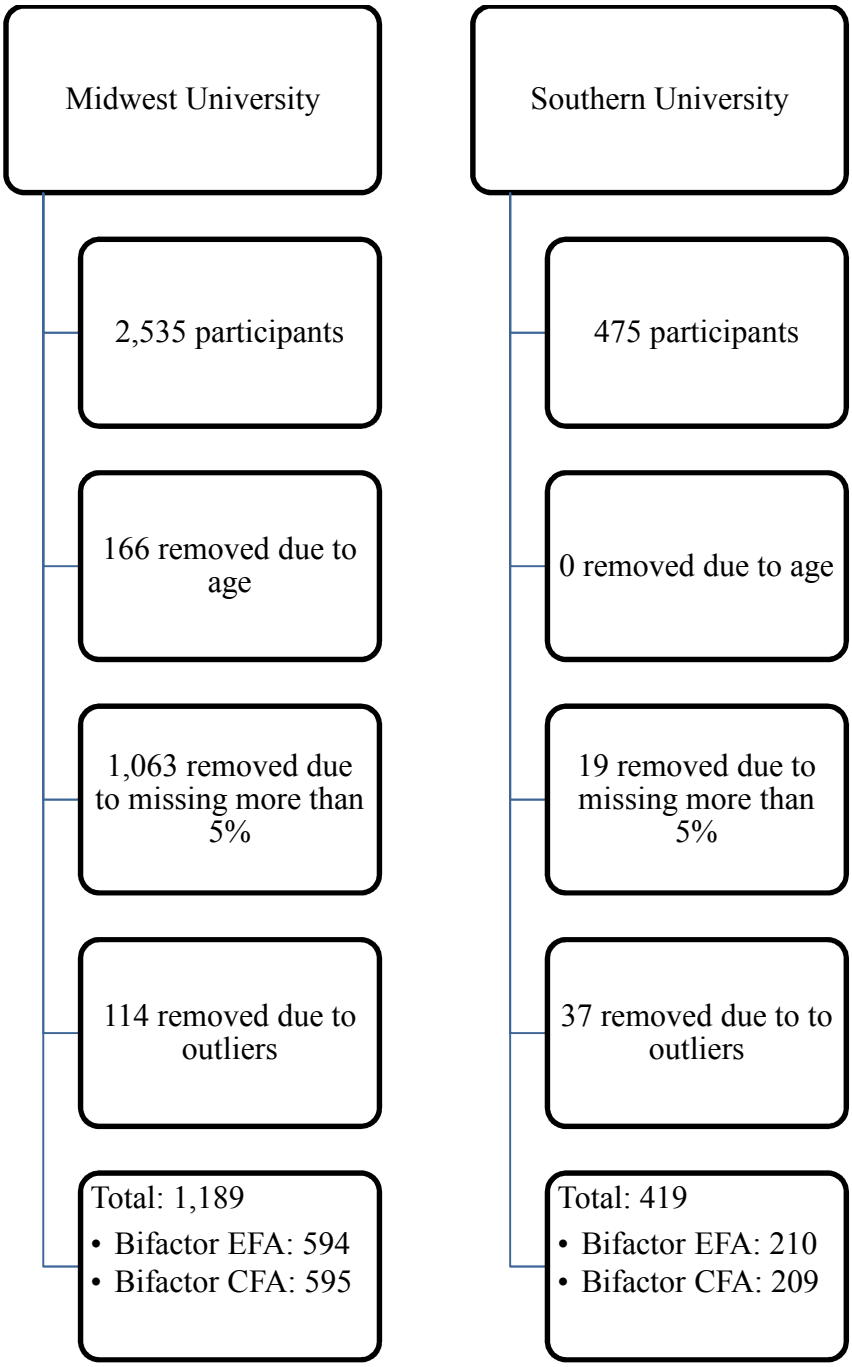
Figure 1. *Bi-factor EFA model of the hypothesized general factor and specific sub-factors of meaning in life, resilience, and hardiness.*



Note. The squares in the above figure represent the individual items (47 items total) being measured by the meaning in life (9 items total), resilience (20 items total), and hardiness (18 items total) questionnaires used in the current study.

APPENDIX 2: PARTICIPANT BREAKDOWN FOR BI-FACTOR EFA AND CFA BY REGION COLLECTED

Figure 2. *Participant Breakdown for Bi-factor EFA and CFA by region collected.*



APPENDIX 3: BI-FACTOR EFA MEASURE AND SAMPLE MEAN, STANDARD DEVIATION, CRONBACH'S ALPHA, AND DESCRIPTIVES

Table 1

Bi-factor EFA Measure and Sample Mean, Standard Deviation, Cronbach's Alpha, and Descriptives.

Measure and Item	Sample	Mean (Standard Deviation)	Cronbach's Alpha
	Overall Bi-Factor EFA	5.13 (1.40)	0.86
	Southern Univ.	5.40 (1.40)	0.85
MLQ-P Item 1	Midwest Univ.	5.10 (1.40)	0.87
	Overall Bi-Factor EFA	5.19 (1.30)	0.85
	Southern Univ.	5.30 (1.30)	0.84
MLQ-P Item 4	Midwest Univ.	5.10 (1.30)	0.86
	Overall Bi-Factor EFA	5.40 (1.30)	0.86
	Southern Univ.	5.60 (1.30)	0.83
MLQ-P Item 5	Midwest Univ.	5.30 (1.20)	0.87
	Overall Bi-Factor EFA	5.11 (1.40)	0.86
	Southern Univ.	5.20 (1.40)	0.84
MLQ-P Item 6	Midwest Univ.	5.10 (1.40)	0.87
	Overall Bi-Factor EFA	5.40 (1.70)	0.92
	Southern Univ.	5.40 (1.90)	0.93
MLQ-P Item 9	Midwest Univ.	5.40 (1.60)	0.92
	Overall Bi-Factor EFA	26.22 (5.87)	0.90
	Southern Univ.	26.88 (5.87)	0.89
MLQ-P Total	Midwest Univ.	25.99 (5.86)	0.90
	Overall Bi-Factor EFA	5.89 (1.10)	0.83
	Southern Univ.	6.10 (1.10)	0.85
PIL-SF Item 1	Midwest Univ.	5.80 (1.00)	0.81
	Overall Bi-Factor EFA	5.83 (1.20)	0.83
	Southern Univ.	6.10 (1.20)	0.86
PIL-SF Item 2	Midwest Univ.	5.70 (1.20)	0.81
	Overall Bi-Factor EFA	5.13 (1.10)	0.86
	Southern Univ.	5.40 (1.20)	0.88
PIL-SF Item 3	Midwest Univ.	5.00 (1.10)	0.84
	Overall Bi-Factor EFA	5.43 (1.20)	0.80
	Southern Univ.	5.60 (1.30)	0.85
PIL-SF Item 4	Midwest Univ.	5.40 (1.20)	0.77
	Overall Bi-Factor EFA	22.28 (3.93)	0.86
	Southern Univ.	23.21 (4.20)	0.89
PIL-SF Total	Midwest Univ.	21.95 (3.78)	0.85
	Overall Bi-Factor EFA	5.70 (1.10)	0.94
	Southern Univ.	5.70 (1.10)	0.94
RS-14 Item 1	Midwest Univ.	5.70 (1.10)	0.94
	Overall Bi-Factor EFA	5.83 (1.10)	0.94
RS-14 Item 2	Southern Univ.	5.90 (1.10)	0.94

	Midwest Univ.	5.80 (1.20)	0.94
	Overall Bi-Factor EFA	5.41 (1.20)	0.94
	Southern Univ.	5.50 (1.10)	0.94
RS-14 Item 3	Midwest Univ.	5.40 (1.20)	0.94
	Overall Bi-Factor EFA	5.60 (1.30)	0.94
	Southern Univ.	5.60 (1.20)	0.94
RS-14 Item 4	Midwest Univ.	5.60 (1.30)	0.94
	Overall Bi-Factor EFA	5.34 (1.30)	0.94
	Southern Univ.	5.40 (1.30)	0.94
RS-14 Item 5	Midwest Univ.	5.30 (1.30)	0.94
	Overall Bi-Factor EFA	5.95 (1.10)	0.94
	Southern Univ.	6.00 (1.10)	0.94
RS-14 Item 6	Midwest Univ.	5.90 (1.20)	0.94
	Overall Bi-Factor EFA	5.68 (1.20)	0.94
	Southern Univ.	5.80 (1.10)	0.94
RS-14 Item 7	Midwest Univ.	5.60 (1.20)	0.94
	Overall Bi-Factor EFA	5.64 (1.20)	0.94
	Southern Univ.	5.70 (1.20)	0.94
RS-14 Item 8	Midwest Univ.	5.60 (1.20)	0.94
	Overall Bi-Factor EFA	5.50 (1.20)	0.94
	Southern Univ.	5.50 (1.30)	0.94
RS-14 Item 9	Midwest Univ.	5.50 (1.20)	0.94
	Overall Bi-Factor EFA	5.99 (1.10)	0.94
	Southern Univ.	6.10 (1.00)	0.94
RS-14 Item 10	Midwest Univ.	5.90 (1.10)	0.94
	Overall Bi-Factor EFA	5.40 (1.40)	0.94
	Southern Univ.	5.50 (1.30)	0.94
RS-14 Item 11	Midwest Univ.	5.40 (1.40)	0.94
	Overall Bi-Factor EFA	5.87 (1.10)	0.94
	Southern Univ.	5.90 (1.20)	0.94
RS-14 Item 12	Midwest Univ.	5.90 (1.10)	0.94
	Overall Bi-Factor EFA	5.89 (1.20)	0.94
	Southern Univ.	6.10 (1.10)	0.94
RS-14 Item 13	Midwest Univ.	5.80 (1.20)	0.94
	Overall Bi-Factor EFA	5.68 (1.10)	0.94
	Southern Univ.	5.80 (1.10)	0.94
RS-14 Item 14	Midwest Univ.	5.60 (1.10)	0.94
	Overall Bi-Factor EFA	79.52 (12.68)	0.94
	Southern Univ.	80.51 (12.35)	0.95
RS-14 Total	Midwest Univ.	79.19 (12.79)	0.94

	Overall Bi-Factor EFA	3.62 (0.96)	0.84
	Southern Univ.	3.70 (0.96)	0.83
BRS Item 1	Midwest Univ.	3.60 (.096)	0.84
BRS Item 2	Overall Bi-Factor EFA	3.30 (1.04)	0.83

	Southern Univ.	3.10 (1.04)	0.82
	Midwest Univ.	3.40 (1.04)	0.84
	Overall Bi-Factor EFA	3.41 (0.99)	0.83
	Southern Univ.	3.40 (0.98)	0.81
BRS Item 3	Midwest Univ.	3.40 (1.00)	0.84
	Overall Bi-Factor EFA	3.21 (1.04)	0.84
	Southern Univ.	3.30 (1.01)	0.82
BRS Item 4	Midwest Univ.	3.20 (1.05)	0.85
	Overall Bi-Factor EFA	3.31 (0.94)	0.87
	Southern Univ.	3.30 (0.94)	0.85
BRS Item 5	Midwest Univ.	3.30 (0.95)	0.88
	Overall Bi-Factor EFA	3.40 (1.03)	0.83
	Southern Univ.	3.30 (1.04)	0.82
BRS Item 6	Midwest Univ.	3.40 (1.03)	0.84
	Overall Bi-Factor EFA	3.38 (0.78)	0.86
	Southern Univ.	3.35 (0.75)	0.85
BRS Total	Midwest Univ.	3.38 (0.78)	0.87
	Overall Bi-Factor EFA	2.30 (0.71)	0.76
PVS III-R Item	Southern Univ.	2.30 (0.72)	0.77
1	Midwest Univ.	2.30 (0.70)	0.76
	Overall Bi-Factor EFA	1.67 (0.87)	0.77
PVS III-R Item	Southern Univ.	1.30 (0.77)	0.78
2	Midwest Univ.	1.80 (0.88)	0.77
	Overall Bi-Factor EFA	1.72 (0.88)	0.77
PVS III-R Item	Southern Univ.	1.70 (0.83)	0.78
3	Midwest Univ.	1.70 (0.90)	0.76
	Overall Bi-Factor EFA	2.25 (0.84)	0.76
PVS III-R Item	Southern Univ.	2.20 (0.86)	0.77
4	Midwest Univ.	2.30 (0.84)	0.76
	Overall Bi-Factor EFA	1.29 (0.89)	0.80
PVS III-R Item	Southern Univ.	1.30 (0.91)	0.81
5	Midwest Univ.	1.30 (0.88)	0.80
	Overall Bi-Factor EFA	1.90 (0.74)	0.77
PVS III-R Item	Southern Univ.	1.90 (0.71)	0.78
6	Midwest Univ.	1.90 (0.75)	0.76
	Overall Bi-Factor EFA	2.40 (0.80)	0.76
PVS III-R Item	Southern Univ.	2.40 (0.84)	0.77
7	Midwest Univ.	2.40 (0.79)	0.75
	Overall Bi-Factor EFA	1.92 (0.79)	0.77
PVS III-R Item	Southern Univ.	1.70 (0.82)	0.78
8	Midwest Univ.	2.00 (0.78)	0.77
	Overall Bi-Factor EFA	1.73 (0.76)	0.77
PVS III-R Item	Southern Univ.	1.70 (0.76)	0.78
9	Midwest Univ.	1.70 (0.76)	0.76
PVS III-R Item	Overall Bi-Factor EFA	2.48 (0.78)	0.76

10	Southern Univ. Midwest Univ.	2.40 (0.83) 2.50 (0.76)	0.77 0.76
PVS III-R Item 11	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	2.37 (0.72) 2.30 (0.76) 2.40 (0.70)	0.76 0.77 0.76
PVS III-R Item 12	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	2.24 (0.81) 2.20 (0.81) 2.30 (0.81)	0.76 0.77 0.75
PVS III-R Item 13	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	1.81 (0.89) 1.50 (0.90) 1.90 (0.87)	0.76 0.79 0.77
PVS III-R Item 14	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	1.51 (0.89) 1.50 (0.84) 1.50 (0.90)	0.77 0.77 0.76
PVS III-R Item 15	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	2.03 (0.93) 2.10 (0.85) 2.00 (0.96)	0.76 0.77 0.76
PVS III-R Item 16	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	1.49 (0.90) 1.30 (0.85) 1.60 (0.90)	0.78 0.79 0.77
PVS III-R Item 17	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	1.72 (0.82) 1.70 (0.83) 1.70 (0.82)	0.76 0.77 0.76
PVS III-R Total	Overall Bi-Factor EFA Southern Univ. Midwest Univ.	35.11 (6.75) 34.00 (6.83) 35.50 (6.69)	0.78 0.79 0.77

Note. MLQ-P = Meaning in Life Presence Subscale; PIL-SF = Purpose in Life test – Short Form; RS-14 = 14 – Item Resilience Scale; BRS = Brief Resilience Scale; PVS III-R = Personal Views Survey III-R.

APPENDIX 4: BI-FACTOR EFA FACTOR LOADINGS

Table 2.

Bi-factor EFA Factor Loadings.

Measure and Item	General Factor	BRS Sub-factor	RS-14 Sub-factor	Hardiness Sub-Factor	h^2	u^2	com
MLQ-P Item 1	.76*	-.23	-.10	-.23	.69	.31	1.40
MLQ-P Item 4	.81*	-.26	-.08	-.18	.76	.24	1.30
MLQ-P Item 5	.80*	-.22	-.09	-.16	.72	.28	1.30
MLQ-P Item 6	.77*	-.22	-.15	-.25	.72	.28	1.50
MLQ-P Item 9	.62*	-.19	-.06	.36*	.55	.45	1.90
PIL-SF Item 1	.66*	-.21	.09	.00	.49	.51	1.20
PIL-SF Item 2	.76*	-.16	.01	-.01	.60	.40	1.10
PIL-SF Item 3	.59*	-.09	.04	-.15	.38	.62	1.20
PIL-SF Item 4	.77*	-.19	-.02	-.10	.63	.37	1.20
RS-14 Item1	.51*	.02	.55*	.11	.58	.42	2.10
RS-14 Item2	.64*	-.16	.50*	.07	.69	.31	2.10
RS-14 Item3	.55*	.07	.47*	-.10	.53	.47	2.10
RS-14 Item4	.59*	.00	.43*	-.07	.54	.46	1.80
RS-14 Item5	.58*	.11	.47*	-.11	.59	.41	2.10
RS-14 Item6	.61*	-.15	.55*	.04	.70	.30	2.10
RS-14 Item7	.51*	-.04	.49*	-.03	.50	.50	2.00
RS-14 Item8	.53*	-.03	.45*	-.03	.48	.52	2.00
RS-14 Item9	.61*	-.07	.43*	-.04	.57	.43	1.90
RS-14 Item10	.59*	-.03	.41*	.06	.53	.47	1.80

RS-14 Item11	.62*	-.04	.33*	-.11	.51	.49	1.60
RS-14 Item12	.53*	-.05	.50*	.02	.53	.47	2.00
RS-14 Item13	.76*	-.23	.25	-.04	.69	.31	1.40
RS-14 Item14	.62*	.11	.40*	-.09	.57	.43	1.80
BRS Item 1	.50*	.55*	.06	-.15	.59	.41	2.20
BRS Item 2	.47*	.63*	-.09	.21	.67	.33	2.10
BRS Item 3	.47*	.60*	.00	-.11	.59	.41	2.00
BRS Item 4	.48*	.54*	-.08	.18	.56	.44	2.30
BRS Item 5	.37*	.40*	.01	-.25	.36	.64	2.70
BRS Item 6	.49*	.58*	-.07	.26	.66	.34	2.40
PVS III-R Item 1	.46*	-.07	.16	.00	.24	.76	1.30
PVS III-R Item 2	.07	.16	.00	.33*	.14	.86	1.60
PVS III-R Item 3	.46*	-.05	.12	-.22	.28	.72	1.60
PVS III-R Item 4	.40*	.16	.02	.48*	.41	.59	2.20
PVS III-R Item 5	-.20	.15	-.05	.21	.11	.89	3.00
PVS III-R Item 6	.43*	-.02	.18	-.13	.23	.77	1.50
PVS III-R Item 7	.44*	.06	.01	.58*	.54	.46	1.90
PVS III-R Item 8	.25	.07	.09	-.17	.10	.90	2.30
PVS III-R Item 9	.45*	.05	.12	-.23	.27	.73	1.70
PVS III-R Item 10	.33*	.04	.00	.63*	.50	.50	1.50
PVS III-R Item 11	.46*	-.09	.19	.09	.26	.74	1.50
PVS III-R Item 12	.39*	.12	.01	.53*	.44	.56	1.90

PVS III-R Item 13	.11	.21	-.05	.38*	.20	.80	1.80
PVS III-R Item 14	.47*	.01	.08	-.25	.29	.71	1.60
PVS III-R Item 15	.44*	.03	-.05	.41*	.36	.64	2.00
PVS III-R Item 16	.19	.14	.08	-.22	.11	.89	3.00
PVS III-R Item 17	.56*	.04	.04	-.25	.38	.62	1.40
PVS III-R Item 18	.37*	-.01	.02	.53*	.42	.58	1.80

Note. * Item that loads at .30 or higher; MLQ-P = Meaning in Life Presence Subscale; PIL-SF = Purpose in Life test – Short Form; RS-14 = 14 – Item Resilience Scale; BRS = Brief Resilience Scale; PVS III-R = Personal Views Survey III-R; h^2 = communalities variance; u^2 = uniqueness variance; com = complexity of the component loadings for that variable.

APPENDIX 5: ITEMS THAT LOAD ONTO THE GENERAL FACTOR

Table 3.

Items that load onto the general factor.

Measure and Item	General Factor	BRS Sub-factor	RS-14 Sub-factor	Hardiness Sub-Factor	Item Statement
MLQ-P Item 1	.76*	-.23	-.10	-.23	I understand my life's meaning.
MLQ-P Item 4	.81*	-.26	-.08	-.18	My life has a clear sense of purpose.
MLQ-P Item 5	.80*	-.22	-.09	-.16	I have a good sense of what makes my life meaningful.
MLQ-P Item 6	.77*	-.22	-.15	-.25	I have discovered a satisfying life purpose.
MLQ-P Item 9	.62*	-.19	-.06	.36*	My life has no clear purpose.
PIL-SF Item 1	.66*	-.21	.09	.00	In life I have: (No goals or aims at all, Neutral, Very clear goals and aims answer choices)
PIL-SF Item 2	.76*	-.16	.01	-.01	My personal existence is: (Utterly meaningless without purpose, Neutral, Very purposeful and meaningful answer choices)
PIL-SF Item 3	.59*	-.09	.04	-.15	In achieving life goals I have: (Made no progress whatsoever, Neutral, Progressed to complete fulfillment answer choices)
PIL-SF Item 4	.77*	-.19	-.02	-.10	I have discovered: (No mission or purpose in life, Neutral, Clear-cut goals and a satisfying life purpose)
RS-14 Item 1	.51*	.02	.55*	.11	I usually manage one way or another.
RS-14 Item 2	.64*	-.16	.50*	.07	I feel proud that I have accomplished things in life.
RS-14 Item 3	.55*	.07	.47*	-.10	I usually take things in stride.

RS-14 Item 4	.59*	.00	.43*	-.07	I am friends with myself.
RS-14 Item 5	.58*	.11	.47*	-.11	I feel that I can handle many things at a time.
RS-14 Item 6	.61*	-.15	.55*	.04	I am determined.
RS-14 Item 7	.51*	-.04	.49*	-.03	I can get through difficult times because I've experienced difficulty before.
RS-14 Item 8	.53*	-.03	.45*	-.03	I have self-discipline.
RS-14 Item 9	.61*	-.07	.43*	-.04	I keep interested in things.
RS-14 Item 10	.59*	-.03	.41*	.06	I can usually find things to laugh about.
RS-14 Item 11	.62*	-.04	.33*	-.11	My belief in myself gets me through hard times.
RS-14 Item 12	.53*	-.05	.50*	.02	In an emergency, I'm someone people can generally rely on.
RS-14 Item 13	.76*	-.23	.25	-.04	My life has meaning.
RS-14 Item 14	.62*	.11	.40*	-.09	When I'm in a difficult situation, I can usually find my way out of it.
BRS Item 1	.50*	.55*	.06	-.15	I tend to bounce back quickly after hard times.
BRS Item 2	.47*	.63*	-.09	.21	I have a hard time making it through stressful events.
BRS Item 3	.47*	.60*	.00	-.11	It does not take me long to recover from a stressful event.
BRS Item 4	.48*	.54*	-.08	.18	It is hard for me to snap back when something bad happens.
BRS Item 5	.37*	.40*	.01	-.25	I usually come through difficult times with little trouble.
BRS Item 6	.49*	.58*	-.07	.26	I tend to take a long time to get over set-backs in my life.
PVS III-R Item 1	.46*	-.07	.16	.00	By working hard, you can always achieve your goal.
PVS III-R	.46*	-.05	.12	-.22	I really look forward to

Item 3					my work.
PVS III-R Item 4	.40*	.16	.02	.48*	I am not equipped to handle the unexpected problems of life.
PVS III-R Item 6	.43*	-.02	.18	-.13	When I make plans, I'm certain I can make them work.
PVS III-R7 Item	.44*	.06	.01	.58*	No matter how hard I try, my efforts usually accomplish little.
PVS III-R Item 9	.45*	.05	.12	-.23	Most of the time, people listen carefully to what I have to say.
PVS III-R Item 10	.33*	.04	.00	.63*	Thinking of yourself as a free person just leads to frustration.
PVS III-R Item 11	.46*	-.09	.19	.09	Trying your best at what you do usually pays off in the end.
PVS III-R Item 12	.39*	.12	.01	.53*	My mistakes are usually very difficult to correct.
PVS III-R Item 14	.47*	.01	.08	-.25	I often wake up eager to take up life wherever it left off.
PVS III-R Item 15	.44*	.03	-.05	.41*	Lots of times, I really don't know my own mind.
PVS III-R Item 17	.56*	.04	.04	-.25	Most days, life is really interesting and exciting for me.
PVS III-R Item 18	.37*	-.01	.02	.53*	It's hard to imagine anyone getting excited about working.

Note. *Item that loads at .30 or higher; MLQ-P = Meaning in Life Presence Subscale; PIL-SF = Purpose in Life test – Short Form; RS-14 = 14 – Item Resilience Scale; BRS = Brief Resilience Scale; PVS III-R = Personal Views Survey III-R.

APPENDIX 6: ITEMS THAT DO NOT LOAD ONTO THE GENERAL FACTOR

Table 4.

Items that do not load onto the general factor.

Measure and Item	General Factor	BRS Sub-factor	RS-14 Sub-factor	Hardiness Sub-Factor	Item Statement
PVS III-R Item 2	.07	.16	.00	.33*	I don't like to make changes in my everyday schedule.
PVS III-R Item 5	-.20	.15	-.05	.21	Most of what happens in life is just meant to be.
PVS III-R Item 8	.25	.07	.09	-.17	I like a lot of variety in my work.
PVS III-R Item13	.11	.21	-.05	.38*	It bothers me when my daily routine gets interrupted.
PVS III-R Item16	.19	.14	.08	-.22	Changes in routine provoke me to learn.

Note. *Item that loads at .30 or higher; PVS III-R = Personal Views Survey III-R.

APPENDIX 7: ITEMS THAT LOAD ONTO THE RS-14 SUB-FACTOR

Table 5.

Items that load onto the RS-14 Sub-factor.

Measure and Item	General Factor	BRS Sub-factor	RS-14 Sub-factor	Hardiness Sub-Factor	Item Statement
RS-14 Item 1	.51*	.02	.55*	.11	I usually manage one way or another.
RS-14 Item 2	.64*	-.16	.50*	.07	I feel proud that I have accomplished things in life.
RS-14 Item 3	.55*	.07	.47*	-.10	I usually take things in stride.
RS-14 Item 4	.59*	.00	.43*	-.07	I am friends with myself.
RS-14 Item 5	.58*	.11	.47*	-.11	I feel that I can handle many things at a time.
RS-14 Item 6	.61*	-.15	.55*	.04	I am determined.
RS-14 Item 7	.51*	-.04	.49*	-.03	I can get through difficult times because I've experienced difficulty before.
RS-14 Item 8	.53*	-.03	.45*	-.03	I have self-discipline.
RS-14 Item 9	.61*	-.07	.43*	-.04	I keep interested in things.
RS-14 Item 10	.59*	-.03	.41*	.06	I can usually find things to laugh about.
RS-14 Item 11	.62*	-.04	.33*	-.11	My belief in myself gets me through hard times.
RS-14 Item 12	.53*	-.05	.50*	.02	In an emergency, I'm someone people can generally rely on.
RS-14 Item 14	.62*	.11	.40*	-.09	When I'm in a difficult situation, I can usually find my way out of it.

Note. *Item that loads at .30 or higher; RS-14 = 14 – Item Resilience Scale.

APPENDIX 8: ITEMS THAT LOAD ONTO THE BRS SUB-FACTOR

Table 6.

Items that load onto the BRS Sub-factor.

Measure and Item	General Factor	BRS Sub-factor	RS-14 Sub-factor	Hardiness Sub-Factor	Item Statement
BRS Item 1	.50*	.55*	.06	-.15	I tend to bounce back quickly after hard times.
BRS Item 2	.47*	.63*	-.09	.21	I have a hard time making it through stressful events.
BRS Item 3	.47*	.60*	.00	-.11	It does not take me long to recover from a stressful event.
BRS Item 4	.48*	.54*	-.08	.18	It is hard for me to snap back when something bad happens.
BRS Item 5	.37*	.40*	.01	-.25	I usually come through difficult times with little trouble.
BRS Item 6	.49*	.58*	-.07	.26	I tend to take a long time to get over set-backs in my life.

Note. *Item that loads at .30 or higher; BRS = Brief Resilience Scale.

APPENDIX 9: ITEMS THAT LOADED ONTO THE HARDINESS SUB-FACTOR

Table 7.

Items that loaded onto the Hardiness Sub-factor.

Measure and Item	General Factor	BRS Sub-factor	RS-14 Sub-factor	Hardiness Sub-factor	Item Statement
MLQ-P Item 9	.62*	-.19	-.06	.36*	My life has no clear purpose.
PVS III-R Item 4	.40*	.16	.02	.48*	I am not equipped to handle the unexpected problems of life.
PVS III-R Item 7	.44*	.06	.01	.58*	No matter how hard I try, my efforts usually accomplish little.
PVS III-R Item 10	.33*	.04	.00	.63*	Thinking of yourself as a free person just leads to frustration.
PVS III-R Item 12	.39*	.12	.01	.53*	My mistakes are usually very difficult to correct.
PVS III-R Item 15	.44*	.03	-.05	.41*	Lots of times, I really don't know my own mind.
PVS III-R Item 18	.37*	-.01	.02	.53*	It's hard to imagine anyone getting excited about working.

Note. * Item that loads at .30 or higher MLQ-P = Meaning in Life Presence Subscale; PVS III-R = Personal Views Survey III-R.

APPENDIX 10: BI-FACTOR CFA MEASURE AND SAMPLE MEAN, STANDARD DEVIATION, CRONBACH'S ALPHA, AND DESCRIPTIVES

Table 8.

Bi-factor CFA Measure and Sample Mean, Standard Deviation, Cronbach's Alpha, and Descriptives

Measure and Item	Sample	Mean (Standard Deviation)	Cronbach's Alpha
MLQ-P Item 1	Overall Bi-Factor CFA	5.09 (1.40)	0.86
	Southern Univ.	5.40 (1.30)	0.82
	Midwest Univ.	5.10 (1.50)	0.87
MLQ-P Item 4	Overall Bi-Factor CFA	5.19 (1.40)	0.85
	Southern Univ.	5.30 (1.40)	0.81
	Midwest Univ.	5.10 (1.40)	0.86
MLQ-P Item 5	Overall Bi-Factor CFA	5.40 (1.30)	0.85
	Southern Univ.	5.60 (1.20)	0.81
	Midwest Univ.	5.30 (1.40)	0.87
MLQ-P Item 6	Overall Bi-Factor CFA	5.12 (1.40)	0.86
	Southern Univ.	5.20 (1.30)	0.82
	Midwest Univ.	5.10 (1.40)	0.87
MLQ-P Item 9	Overall Bi-Factor CFA	5.36 (1.70)	0.93
	Southern Univ.	5.40 (1.80)	0.93
	Midwest Univ.	5.30 (1.70)	0.93
MLQ-P Total	Overall Bi-Factor CFA	26.16 (5.97)	0.89
	Southern Univ.	26.99 (5.49)	0.87
	Midwest Univ.	25.86 (6.10)	0.90
PIL-SF Item 1	Overall Bi-Factor CFA	5.90 (1.10)	0.81
	Southern Univ.	6.10 (1.10)	0.85
	Midwest Univ.	5.90 (1.10)	0.79
PIL-SF Item 2	Overall Bi-Factor CFA	5.86 (1.20)	0.80
	Southern Univ.	6.10 (1.10)	0.86
	Midwest Univ.	5.80 (1.20)	0.77
PIL-SF Item 3	Overall Bi-Factor CFA	5.17 (1.10)	0.85
	Southern Univ.	5.50 (1.10)	0.87
	Midwest Univ.	5.10 (1.10)	0.84
PIL-SF Item 4	Overall Bi-Factor CFA	5.49 (1.20)	0.79
	Southern Univ.	5.70 (1.10)	0.82
	Midwest Univ.	5.40 (1.10)	0.77
PIL-SF Total	Overall Bi-Factor CFA	22.44 (3.86)	0.85
	Southern Univ.	23.36 (3.71)	0.88
	Midwest Univ.	22.12 (3.87)	0.84

RS-14 Item 1	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.70 (1.20) 5.70 (1.10) 5.70 (1.20)	0.95 0.95 0.94
RS-14 Item 2	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.82 (1.20) 5.90 (1.10) 5.80 (1.30)	0.95 0.94 0.94
RS-14 Item 3	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.37 (1.20) 5.50 (1.00) 5.30 (1.20)	0.95 0.94 0.95
RS-14 Item 4	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.53 (1.40) 5.56 (1.30) 5.50 (1.50)	0.95 0.94 0.95
RS-14 Item 5	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.30 (1.40) 5.40 (1.20) 5.20 (1.50)	0.95 0.94 0.95
RS-14 Item 6	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.92 (1.20) 6.00 (1.00) 5.90 (1.20)	0.95 0.94 0.95
RS-14 Item 7	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.70 (1.30) 5.80 (1.10) 5.70 (1.30)	0.95 0.94 0.95
RS-14 Item 8	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.50 (1.30) 5.60 (1.30) 5.50 (1.40)	0.95 0.95 0.95
RS-14 Item 9	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.50 (1.30) 5.60 (1.20) 5.50 (1.30)	0.95 0.94 0.95
RS-14 Item 10	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.94 (1.20) 6.10 (1.00) 5.90 (1.20)	0.95 0.94 0.95
RS-14 Item 11	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.40 (1.40) 5.60 (1.20) 5.30 (1.50)	0.95 0.94 0.95
RS-14 Item 12	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.89 (1.20) 5.90 (1.10) 5.90 (1.20)	0.95 0.94 0.95
RS-14 Item 13	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.83 (1.30) 6.00 (1.00) 5.80 (1.40)	0.95 0.94 0.95
RS-14 Item 14	Overall Bi-Factor CFA Southern Univ. Midwest Univ.	5.64 (1.20) 5.90 (1.10) 5.60 (1.20)	0.95 0.94 0.95
RS-14 Total	Overall Bi-Factor CFA Southern Univ.	79.02 (14.00) 80.57 (11.91)	0.95 0.95

	Midwest Univ.	78.48 (14.63)	0.95
	Overall Bi-Factor CFA	3.56 (1.01)	0.84
	Southern Univ.	3.70 (0.96)	0.84
BRS Item 1	Midwest Univ.	3.50 (1.02)	0.84
	Overall Bi-Factor CFA	3.28 (1.04)	0.83
	Southern Univ.	3.20 (1.03)	0.83
BRS Item 2	Midwest Univ.	3.30 (1.04)	0.84
	Overall Bi-Factor CFA	3.38 (0.98)	0.84
	Southern Univ.	3.30 (0.97)	0.84
BRS Item 3	Midwest Univ.	3.40 (0.98)	0.84
	Overall Bi-Factor CFA	3.26 (1.04)	0.84
	Southern Univ.	3.40 (1.01)	0.82
BRS Item 4	Midwest Univ.	3.20 (1.05)	0.85
	Overall Bi-Factor CFA	3.37 (0.94)	0.87
	Southern Univ.	3.20 (0.92)	0.85
BRS Item 5	Midwest Univ.	3.30 (0.96)	0.87
	Overall Bi-Factor CFA	3.40 (1.03)	0.84
	Southern Univ.	3.35 (0.97)	0.82
BRS Item 6	Midwest Univ.	3.40 (1.05)	0.84
	Overall Bi-Factor CFA	3.36 (0.78)	0.87
	Southern Univ.	3.37 (0.75)	0.85
BRS Total	Midwest Univ.	3.35 (0.79)	0.87
	Overall Bi-Factor CFA	2.30 (0.73)	0.76
PVS III-R	Southern Univ.	2.30 (0.69)	0.71
Item 1	Midwest Univ.	2.30 (0.74)	0.77
	Overall Bi-Factor CFA	1.65 (0.91)	0.77
PVS III-R	Southern Univ.	1.50 (0.92)	0.72
Item 2	Midwest Univ.	1.70 (0.90)	0.79
	Overall Bi-Factor CFA	1.70 (0.85)	0.76
PVS III-R	Southern Univ.	1.70 (0.78)	0.73
Item 3	Midwest Univ.	1.70 (0.88)	0.77
	Overall Bi-Factor CFA	2.20 (0.86)	0.76
PVS III-R	Southern Univ.	2.20 (0.89)	0.70
Item 4	Midwest Univ.	2.20 (0.84)	0.77
	Overall Bi-Factor CFA	1.20 (0.91)	0.80
PVS III-R	Southern Univ.	1.20 (0.83)	0.76
Item 5	Midwest Univ.	1.20 (0.94)	0.82
	Overall Bi-Factor CFA	1.90 (0.74)	0.77
PVS III-R	Southern Univ.	1.90 (0.71)	0.72
Item 6	Midwest Univ.	1.90 (0.75)	0.78
	Overall Bi-Factor CFA	2.30 (0.83)	0.76
PVS III-R	Southern Univ.	2.40 (0.81)	0.71
Item 7	Midwest Univ.	2.30 (0.84)	0.77
PVS III-R	Overall Bi-Factor CFA	1.91 (0.79)	0.77
Item 8	Southern Univ.	1.80 (0.76)	0.73

	Midwest Univ.	2.00 (0.79)	0.78
PVS III-R Item 9	Overall Bi-Factor CFA	1.80 (0.72)	0.77
	Southern Univ.	1.70 (0.68)	0.72
	Midwest Univ.	1.80 (0.73)	0.78
PVS III-R Item 10	Overall Bi-Factor CFA	2.41 (0.82)	0.76
	Southern Univ.	2.40 (0.82)	0.72
	Midwest Univ.	2.40 (0.82)	0.78
PVS III-R Item 11	Overall Bi-Factor CFA	2.30 (0.77)	0.76
	Southern Univ.	2.30 (0.77)	0.71
	Midwest Univ.	2.30 (0.76)	0.77
PVS III-R Item 12	Overall Bi-Factor CFA	2.20 (0.81)	0.76
	Southern Univ.	2.30 (0.78)	0.71
	Midwest Univ.	2.20 (0.82)	0.77
PVS III-R Item 13	Overall Bi-Factor CFA	1.76 (0.93)	0.77
	Southern Univ.	1.60 (0.92)	0.71
	Midwest Univ.	1.80 (0.93)	0.79
PVS III-R Item 14	Overall Bi-Factor CFA	1.50 (0.90)	0.76
	Southern Univ.	1.50 (0.93)	0.72
	Midwest Univ.	1.60 (0.89)	0.78
PVS III-R Item 15	Overall Bi-Factor CFA	2.00 (0.93)	0.76
	Southern Univ.	2.10 (0.86)	0.71
	Midwest Univ.	2.00 (0.95)	0.78
PVS III-R Item 16	Overall Bi-Factor CFA	1.45 (0.86)	0.78
	Southern Univ.	1.20 (0.82)	0.74
	Midwest Univ.	1.50 (0.86)	0.79
PVS III-R Item 17	Overall Bi-Factor CFA	1.70 (0.86)	0.76
	Southern Univ.	1.70 (0.82)	0.70
	Midwest Univ.	1.70 (0.87)	0.79
PVS III-R Item 18	Overall Bi-Factor CFA	2.20 (0.89)	0.76
	Southern Univ.	2.30 (0.85)	0.71
	Midwest Univ.	2.20 (0.90)	0.77
PVS III-R Total	Overall Bi-Factor CFA	34.58 (6.85)	0.78
	Southern Univ.	33.92 (6.22)	0.73
	Midwest Univ.	34.82 (7.04)	0.77

Note. MLQ-P = Meaning in Life Presence Subscale; PIL-SF = Purpose in Life test – Short Form; RS-14 = 14 – Item Resilience Scale; BRS = Brief Resilience Scale; PVS III-R = Personal Views Survey III-R.

VITA

Lauren N. Weathers, M.A.

CURRICULUM VITAE

EDUCATION

2013-2019	Doctor of Philosophy in Clinical Psychology University of Mississippi, University, MS *Dissertation:* On the Relationship Between Resilience, Meaning, and Hardiness: A Bi-Factor Exploratory and Confirmatory Analysis Supervisor: Stefan Schulenberg, Ph.D. Current GPA: 3.8
2011-2013	Master's of Arts in Psychological Science: Concentration: Cognition Western Kentucky University, Bowling Green, KY *Thesis:* Like or Dislike: The Emotional Toll of Being on Facebook Supervisor: W. Pitt Derryberry, Ph.D. Cumulative GPA: 3.9
2007-2011	Honors Bachelor of Arts in Psychology with a Minor in Business Queens University of Charlotte, Charlotte, NC Supervisor: Melinda Harper, Ph.D. Psychology GPA: 3.9; Cumulative GPA: 3.8

CERTIFICATIONS

October 2016	**Examination for Professional Practice in Psychology (EPPP)** Passed at the Doctoral Level for all states
July 2016-Present	**Provisionally Certified Mental Health Therapist (PCMHT)** Mississippi Department of Mental Health

CLINICAL EXPERIENCE

July 2018-Present	**Central Texas Veterans Health Care System Pre-Doctoral Psychology Intern, APA Accredited Internship** *Rotation 1: Mental Health Clinic* (7/30/18-11/23/18): Co-facilitated CBT for Chronic Pain, DBT, and Mindful Self-Compassion groups. Conducted comprehensive biopsychosocial assessments, which include determination of DSM 5 diagnoses, initial treatment plans, and provide individual therapy. Member

of an interdisciplinary team working with patients who have a variety of presenting issues in a public mental health setting.
Supervisors: Erin Andrews, Psy.D., ABPP, Jana Drew, Ph.D. , Holly LaPota, Ph.D.

Rotation 2: Primary Care Behavioral Health (11/26/18-3/22/19): Conducted brief evaluation and treatment of clinical and health psychology problems, triage decision-making to prioritize service delivery, consultation and collaboration with primary care providers for psychological and medical management, psychological assessment, individual and group psychotherapy, and coordination of care with the onsite psychiatrists and social workers.
Supervisors: *Jack Tsan, Ph.D. & Christen Mullane, Ph.D.*

Minor 1: Rehabilitation Neuropsychology (7/30/18-1/28/19): Gained experience on theoretical and practical issues of neuropathology, strategic selection of neurocognitive test instruments, evaluating a variety of neurological conditions, case conceptualization and test interpretation, efficiency in report writing, and patient feedback and follow-up.
Supervisor: Shawneen Pazienza, Ph.D.

Rotation 3: Substance Abuse Treatment Program (3/25/19-7/19/19)*:* Will lead various types of substance abuse groups that integrate cognitive behavioral, mindfulness, interpersonal process, and somatic/body-oriented perspectives in assessment and treatment. The organization of these groups will be loosely structured around Stages of Change principles. I will also help run"Satellite" groups which place greater emphasis on the collateral mental health problems that are often enmeshed with their substance use and which further compromise their functioning (e.g. mood disorders, PTSD, other anxiety disorders, dissociation and characterological problems).
Supervisors: Yvette Gutierrez Psy.D, Quoc (Thai) Le, Ph.D., Scott Steiner Ph.D.

Minor 2: Leadership and Administration (1/31/19-7/19/19): This minor rotation is an introduction to leadership and administration for psychologists in medical and government settings. Will gain exposure to business leadership concepts that are important in healthcare settings and engage in meaningful administrative functions in their professional training. Will receive training in servant leadership, a model of ethical, evidence-based leadership. Will become familiar with systemic measures of quality and quantity of care including productivity monitoring, mental health scheduling, missed opportunity improvement, electronic wait list monitoring for mental health, mental health access (including supply/demand management), access, clinical utility, mental health coding, labor mapping, measurement based care, management, and other relevant items for business operations in mental health. Will learn requirements of the Office of Mental Health Operations (OMHO) Uniform Mental Health Services Handbook, and have the opportunity to conduct program evaluation related to monitoring of patient and administrative outcomes utilizing national dashboards (e.g., Mental Health SAIL, Mental Health Information System, Mental Health Management System, and others) for management and quality improvement processes.
Supervisor: Erin Andrews, Psy.D., ABPP

August 2014-June 2018 **Graduate Therapist**
Psychological Services Center, University of Mississippi, University, MS
Duties include conducting intake assessments, developing treatment plans, providing therapy, preparing client process notes and reports, and participating in weekly didactics related to case conceptualization, treatment planning and implementation of Cognitive-Behavioral Therapy, behavioral interventions, parent training, and Acceptance and Commitment Therapy.

Supervisors: Stefan Schulenberg, Ph.D., Scott Gustafson, Ph.D., ABPP, John Young, Ph.D., Kelly Wilson, Ph.D., Alan M. Gross, Ph.D.

August 2015-June 2018 **Graduate Psychological Examiner**
Psychological Assessment Clinic, University of Mississippi, University, MS
Provide comprehensive psychological evaluations to assess for learning disabilities, Attention-Deficit/Hyperactivity Disorder, mood/anxiety disorders, and personality disorders. Participate in weekly supervision meetings focused on conceptualization and report writing.
Supervisor: Scott Gustafson, Ph.D., ABPP

June 2016-July 2017 **Intern Therapist**
Communicare, Oxford, MS
Provided clinical interventions to a diverse group of low income individuals in community mental health setting. Worked with case managers, nursing staff, and physicians to provide comprehensive and integrated care. Participated in didactics related to case conceptualization, treatment planning and implementation of cognitive-behavioral interventions.
Supervisor: Dixie Church, LMF, Scott Gustafson, Ph.D., ABPP

August-December 2016 **Psychological Examiner**
DeSoto School District, DeSoto County, MS.
Administered comprehensive psychological evaluations to assess for Attention-Deficit/Hyperactivity Disorder, learning disabilities, and other mental health concerns. Scored tests, wrote integrated reports, and present feedback during the clients' Individualized Education Plan (IEP) meetings.
Supervisor: Shannon Sharp, Ph.D.

August 2014-May 2015 **Co-facilitator of the International Ladies Club**
Office of International Students, University of Mississippi. *University, MS*
Led an ethnically diverse support group of international women focused on aiding them through their acculturation process to the university and community life. Participants were mostly from Middle-Eastern, Asian, Northern European, and Caribbean countries.
Supervisor: Laura Johnson, Ph.D.

January-May 2014 **Co-facilitator of the Mindfulness Based Strengths Practice Group**
Psychological Service Center, University of Mississippi, University, MS
Co-facilitated a Mindfulness Based Strengths Practice Group (MBSP) using Ryan M. Niemiec's *Mindfulness Character & Strengths: A Practical Guide to Flourishing* manual to community members of Oxford, MS.
Supervisor: Stefan Schulenberg, Ph.D.

May 2010- August 2010 **Clinical Case Manager Assistant**
National Crime Victims Research and Treatment Center, Medical University of South Carolina, Charleston, SC
Assisted with a federally funded Victims of Crime Act Grant in order to help patients utilize the outpatient services of the National Crime Victims Research and Treatment Center. Provided emotional support and assistance with crisis intervention, and transported families to victim-related appointments. Shadowed a law enforcement victim advocate at bond hearings and the solicitor's victim advocate at murder trials. Shadowed a National Crime Victims Treatment and Research Center therapist who attended a plea bargain session in court in order to be there for the psychological needs of the client who was a sexual assaulted by the perpetrator pleading guilty. Observed SIHLE groups at two locations with two

different teen demographics; one at the Department of Juvenile Justice and the other at Florence Crittenton, a house where pregnant teens stay who are in need. Observed the Homicide of Survivors Support Group, a group for family and friends of homicide victims. Attended community staff meetings at a child advocacy center.
Supervisor: Alyssa Rheingold, Ph.D.

August 2009-May 2011 **Transition to University (T2U) Facilitator**
Queens University of Charlotte, Charlotte, NC
Facilitated group discussions with a small group of eight to ten college freshmen at Queens University of Charlotte in order to help the students transition to university life and thus increase university retention rates. Weekly group discussions included personal experiences with peer pressure, sex, substance abuse, and building social skills.
Supervisors: Melinda Harper, Ph.D. and Christine Allegretti, Ph.D.

May-August 2009 **Clinical Case Manager Assistant**
National Crime Victims Research and Treatment Center, Medical University of South Carolina, Charleston, SC
Contacted families via telephone who are scheduled for forensic medical exams following disclosure of sexual abuse. Specifically, assisted with the coordination of follow-up care by assisting with crisis intervention and transporting families to victim-related appointments. Also, provided emotional support and mental health information to families at Dee Norton's Low Country Children's Center (DNLCC), a local child advocacy center. Provided written notation for videotaped forensic interviews at DNLCC. Observed kid education groups and caregiver's support group while at DNLCC. Trained in empathetic listening skills. Observed the Homicide for Survivors Support Group. Attended community staff meetings at a local child advocacy center.
Supervisor: Alyssa Rheingold, Ph.D.

PUBLICATIONS

Weathers, L. N., Aiena, B. J., Blackwell, M. A., & Schulenberg, S. E. (2016). The significance of meaning to conceptualizations of resilience and posttraumatic growth: Strengthening the foundation for research and practice. In P. Russo-Netzer, S. E. Schulenberg, & A. Batthyany (Eds.), *Clinical perspectives on meaning* (pp. 149-169). Switzerland: Springer International Publishing.

MANUSCRIPTS IN PREPARATION

Alessandri, F. T., **Weathers, L.**, Lombardo, T. W., & Christoff, K. A. *Expressive writing moderated by DSM-5 stressor criterion; Introducing a 100-minute acceptance-based protocol for adjustment to potentially traumatic events regardless of stressor type* (peer reviewed submission under review).

RESEARCH EXPERIENCE

August 2013-June 2018 **Graduate Research Assistant**
University of Mississippi Clinical-Disaster Research Center (UM-CDRC), University of Mississippi, University, MS
The UM-CDRC integrates service, training, and research in disaster mental health. Aided in the research devised to create and evaluate empirically driven disaster preparedness, mitigation, and response programs. Gained experience writing a book chapter illustrating the relationship and clinical significance of meaning in life, resilience, and posttraumatic growth. Gained experience working with a team of researchers at the University of Mississippi Medical Center to explore the relationship between meaning in life and smoking cessation in patients with schizophrenia in the hopes of creating a smoking cessation protocol for this population. Aided in grant applications, analyzing data, creating surveys, and attended lab meetings.

Supervisor: Stefan Schulenberg, Ph.D.

August 2014-August 2017 **Graduate Clinical Research Assistant**
St. Jude Children's Research Hospital, Memphis, TN
Student research assistant on three research protocols. Two of the protocols involve recruiting participants, collecting data, and analyzing data involving pediatric Sickle Cell Disease patients in order to observe enuresis or adherence to Hydroxurea. The third protocol is a preliminary randomized controlled trial testing the effectiveness of a behavior intervention to bolster adherence rates to HAART medication treatment regimens in adolescent and young adult HIV patients. This protocol involved recruiting participants, collecting data, analyzing data, and attending weekly case management meetings within the Infectious Disease Clinic.
Supervisors: Jerlym Porter, Ph.D. and Lisa Ingerski, Ph.D.

January-May 2017 **Graduate Clinical Research Assistant**
Smoking Cessation and PTSD Research Lab, University of Mississippi, University, MS
Collected data for a study that examined if the cognitive distortion patterns vary by trauma type, if cognitive distortions vary by PTSD personality subtype, and if resilience affects cognitive distortion severity. Administered and scored the PTSD Checlist-5, Trauma Assessment for Adults, and Trauma and Attachment Belief scale among others to college participants.
Supervisor: Thomas W. Lombardo, Ph.D.

May-August 2016 **Graduate Clinical Research Assistant**
Science Infusion That Helps (SITH) Lab, University of Mississippi, University, MS and University of Mississippi Medical Center, Jackson, MS
Clinical research assistant for the Instrument Validation Protocol. The aim of the protocol was to create a shorter self-report version of the MINI 6.0 (the Mini International Neuropsychiatric Interview). Conducted structured clinical interviews using the MINI 6.0 in the hospital's emergency department at the University of Mississippi Medical Center. Additionally, scored and reported outcomes to personnel including doctors and nurses to assist with improvements for suicide risk assessment within the emergency department.
Supervisor: John Young, Ph.D.

January-August 2015 **Graduate Clinical Research Assistant**
Smoking Cessation and PTSD Research Lab, University of Mississippi, University, MS
Aided in data collection for a study that examined whether participants who were trained with either an action/shooting video game, a strategy/puzzle video game, or board games impacted cognitive skill ability. Administered and scored neuropsychological measures including the Repeatable Battery for Assessment of Neuropsychological Status (RBANS), Trail Making Test A & B, Wisconsin Card Sorting Task, Tower of London, Wechsler Abbreviated Scale of Intelligence (WASI), a mental rotation task, a sustained attention task, split attention task, and the Stroop test to participants.
Supervisor: Thomas W. Lombardo, Ph.D.

January-August 2014 **Graduate Clinical Research Assistant**
Smoking Cessation and PTSD Research Lab, University of Mississippi, University, MS
Administered two active interventions in a randomized clinical trial for reducing PTSD symptoms in a student sample (N=86), as part of a doctoral dissertation. Interventions consisted of an amassed 2-hour block per participant with one condition implementing a 3-essay expressive writing protocol and the other receiving a novel intervention involving psychoeducation, acceptance, and organization of traumatic experiences and reactions including cognitions.

Supervisors: Thomas W. Lombardo, Ph.D. and Karen A. Christoff, Ph.D.

August 2011-June 2013 **Graduate Research Assistant**
Research of Ethical and Social Topics (REST) Lab, *Western Kentucky University, Bowling Green, KY*
The REST Lab examines moral development in adolescence and adulthood. Topics such as technological usage and its role in moral development are also studied. Administered research projects to participants, scored participant data, conducted data entry, edited manuscripts, and attended lab meetings.
Supervisor: W. Pitt Derryberry, Ph.D.

August-December 2010 **Co-Investigator: A Group Within a Group: A Practicum in Group Dynamics**
Queens University of Charlotte, Charlotte, NC
The study was conducted to examine how the leadership skills of T2U facilitators change over the semester. Also investigated how "connected" students are to the groups as an outcome measure of the effectiveness of the course's ability to teach group dynamic skills. As the third investigator I was in charge of data organization and data entry into SPSS, as well as running descriptive statistics and conducting correlational analyses.
Supervisors: Christine Allegretti, Ph.D. and Melinda Harper, Ph.D.

May-August 2010 **Research Assistant**
National Crime Victims Research and Treatment Center, Medical University of South Carolina, Charleston, SC
Assisted on several federally funded research studies. Trained interviewer for an OVC funded grant, which included a telephone, structured interview of survivors of homicide. Interview included assessment of several *DSM-IV* disorders such as post-traumatic stress disorder, major depression, complicated bereavement, service utilization, and satisfaction of local resources. Data entry research assistant on a CDC grant. Assisted SAMHSA funded HIV prevention program for African American adolescents. Observed SIHLE groups with delinquent teens and pregnant teens as a part of the SAMHSA grant. SIHLE stands for Sisters Healing Living and Empowering. SIHLE is a program that the EMPOWERR (Ethnic Minority Prevention Outreach and Web-Based Educated for Risk Reduction) program is currently utilizing. Trained in fidelity rating of SIHLE group facilitators.
Supervisors: Alyssa Rheingold, Ph.D., April Borkman, M.A., Carla Kmett Danielson, Ph.D., and Benjamin Saunders, Ph.D.

January-May 2010 **Focus Group Moderator**
Queens University of Charlotte, Charlotte, NC
These focus groups were conducted at the request of the Vice President for Student Enrollment at Queens University of Charlotte. The purpose of the groups was to see how the students felt about the student/teacher interactions.
Supervisor: Cherie Clark, Ph.D.

January-May 2010 **Focus Group Moderator**
Right Moves for Youth, Charlotte, NC
These focus groups were conducted at the request of Right Moves for Youth, a joint project conducted by the Charlotte-Mecklenburg Police Department, Charlotte-Mecklenburg Schools, and the Mecklenburg County Sherriff's Office. The project aimed to keep at-risk youth off the streets, teaching vital tools to help

them succeed in life. The purpose of the focus group was to see what past participants liked or disliked about the summer camp Right Moves for Youth conducts in the summer. Furthermore, the group discussed if the name of the camp should be changed and why.
Supervisors: Officer Lisa Speas and Cherie Clark, Ph.D.

August 2009-May 2010 **Primary Investigator: Honors Thesis: Motivations for Self-Disclosing on Facebook**
Queens University of Charlotte, Charlotte, NC
The research project was created in order to better understand why emerging adults self-disclose using the social networking site Facebook. The research examined whether emerging adults self-disclose on Facebook because they are attention seeking, seeking support, or due to their narcissism levels. As the sole author I designed the study, received IRB permission, conducted literature searches, created informed consent and debriefing forms, assembled the questionnaire, used surveymonkey.com to administer the questionnaire, entered data into SPSS, analyzed the results, and wrote the paper for my honors thesis.
Supervisors: Melinda Harper, Ph.D. and Cherie Clark, Ph.D.

August 2009-May 2011 **T2U Research Assistant**
Queens University of Charlotte, Charlotte, NC
Collaborated on T2U, a research project that examines university retention rates. Assisted in the data entry and interpretation of T2U data.
Supervisors: Melinda Harper, Ph.D. and Christine Allegretti, Ph.D.

May-August 2009 **Research Assistant**
National Crime Victims Research and Treatment Center, Medical University of South Carolina, Charleston, SC
Assisted with data entry of a CDC grant. Administered the Trauma Symptom Checklist for Children, a measure assessing children's trauma history.
Supervisor: Alyssa Rheingold, Ph.D.

PROFESSIONAL PRESENTATIONS

Weathers, L. N., Florez, I., & Schulenberg, S. E. (2017, July*). A study of self-transcendence and psychological flexibility in a college student sample: The meditational role of meaning in life.* Poster presentation at the Fifth World Congress on Positive Psychology, Montréal, Québec, Canada.

Weathers, L. N. & Schulenberg, S. E. (2017, April). *Meaning as a facilitator of resilience and posttraumatic growth: Recommendations for research and practice.* Oral presentation at the University of Mississippi Conference on Psychological Science, University, MS.

Weathers, L. N., Florez, I., Blackwell, M. A., Schulenberg, S. E., & Buchanan, E. M. (2016, October*). The role of meaning in life in hypothesized models with resilience, posttraumatic growth, and posttraumatic stress.* Poster presentation at the Association for Behavioral and Cognitive Therapies, New York, NY.

Weathers, L. N., Means, B. L., Wilkins, M., Gaur, A., Patel, N., & Ingerski, L. M. (2016, October). *Beliefs about medication in youth with horizontally-acquired HIV initiating active treatment.* Poster presentation at the Association for Behavioral and Cognitive Therapies, New York, NY.

Weathers, L. N. & Schulenberg, S. E. (2016, September). *Meaning, resilience, and self-efficacy: Studies of Mississippi coastal residents and the Deepwater Horizon Oil Spill.* Oral presentation at the Oil Spill Science Seminar: Building Resilient Communities, Long Beach, MS.

Tkachuck, M. A., **Weathers, L. N.,** Florez, I. A., Schulenberg, S. E. (2016, June). *Meaning in life, Psychological flexibility, and valued living: Birds of a feather?* Poster presentation at the Association for Contextual

Behavioral Science World Conference, Seattle, WA.

Clark, K. N., **Weathers, L. N.,** Porter, J. S., Wang, W. C., & Inerski, L. M. (2015, October). Acceptability and feasibility of electronic medication adherence technology in a pediatric hematology clinic. Poster presentation at the Society for Developmental and Behavioral Pediatrics Annual Meeting, Las Vegas, NV.

Means, B. L., **Weathers, L. N.,** Russel, K. M., Wilkins, M. L., Gaur, A. H., Patel, N. D., Ingerski, L. M. (2015, September). *Health-related quality of life of youth with horizontally-acquired HIV initiating active treatment*. Poster presentation at the Society of Clinical Research Associates, Denver, CO.

Weber, M.C., Tkachuck, M., **Weathers, L.**, & Schulenberg, S. E. (2015, April). *Emergency Preparedness of UM Students.* Oral presentation at the University of Mississippi Conference on Psychological Science, University MS.

Weber, M. C., **Weathers, L.,** Tkachuck, M., & Schulenberg, S. E. (2015, April). *Emergency Preparedness of UM Faculty and Staff*. Oral presentation at the University of Mississippi Conference on Psychological Science, University, MS.

Alessandri, F. T., **Weathers, L. N.,** Lombardo, T. W., & Christoff, K. A. (2014, November). *Preliminary Results from an RCT Comparing a Brief Directive Therapy Protocol with Expressive Writing for the Reduction of PTSD Symptoms.* Poster presentation at the annual conference of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.

Weathers, L. N. & Derryberry, W. P. (2014, April) *Like or dislike: The emotional toll of being on Facebook.* Oral presentation at The University of Mississippi Conference on Psychological Science, University, Mississippi.

Weathers, L. N. (2012, May). *Attention, support, and face-to-face self-disclosure as predictors of self-disclosure on Facebook.* Poster presentation at the Association for Psychological Sciences Annual Convention, Chicago, Illinois.

Weathers, L. N. (2012, March). *Attention, support, and face-to-face self-disclosure as predictors of self-disclosure on Facebook.* Poster presentation at the 42nd Annual WKU Student Research Conference, Bowling Green, Kentucky.

Derryberry, W. P., Clark, L., Baker, D., **Weathers, L.,** & Grieve, F. (2012, April). *Exploring the relationships among various forms of attention and moral judgment*. Poster presentation at the annual meeting of the American Educational Research Association, Vancouver, British Columbia, Canada.

Allegretti, C. L., Harper, M. S., & **Weathers, L. N.** (2011, January). *A group within a group: A practicum in group dynamics*. Poster presentation at the 33rd Annual National Institute on the Teaching of Psychology Conference.

Weathers, L. N. (2010, November). *Motivations for self-disclosing on Facebook.* Poster presentation at the North Carolina Psychological Association August 2010 Conference, Chapel Hill, North Carolina.

Weathers, L. N. (2010, April). *Say what you need to say: A study of face-to-face self-disclosure in emerging adults.* Poster presentation at the North Carolina Psychological Association Spring 2010 Conference, Charlotte, North Carolina.

Weathers, L. N. (2010, April). *Say what you need to say: A study of face-to-face self-disclosure in emerging adults.* Poster presentation at the 18th Annual Central Carolina Conference on Psychology and Marketing Excellence Conference, Charlotte, North Carolina.

Orlando, C., & **Weathers, L. N.** (2009, April). *Contextual-dependent olfactory memory on memory decay in word recall tasks.* Poster presentation at the North Carolina Psychological Association's 2009 Spring Conference, Chapel Hill, North Carolina.

ADMINISTRATIVE EXPERIENCE

July 2017-July 2018 **Assistant to the Director at the Psychological Services Center**
Psychological Service Center, University of Mississippi, University, MS
Provided administrative oversight of graduate student therapists and trained graduate students in clinic procedures Managed record keeping, Titanium software, and client and supervisor notes throughout Department. Advertised clinic services to the community, designed clinic publication, and outreach materials
Supervisor: Scott Gustafson, Ph.D., ABPP

TEACHING EXPERIENCE

August 2017-May 2018 **Graduate Teaching Assistant**
Department of Psychology, University of Mississippi, University, MS
Was the teaching assistant for an introduction to psychology that typically contains 300-400 people. Held office hours each week to answer student questions about course material, reviewed exams with students, proctored exams, and managed the grade book.
Supervisor: Todd A. Smitherman, Ph.D.

April 2016, August 2016 **Guest Lecturer**
Department of Psychology, University of Mississippi, University, MS
Taught one class each semester concerning teaching freshman psychology majors disaster preparedness and the psychological impact of disasters.
Supervisor: Stefan Schulenberg, Ph.D.

April 2016 **Guest Lecturer**
Department of Psychology, University of Mississippi, University, MS
Led a discussion to a honors class regarding Viktor Frankl's *Man's Search for Meaning* and discussed current meaning in life research.
Supervisor: Stefan Schulenberg, Ph.D.

May-June 2013 **Graduate Instructor**
Department of Psychology Western Kentucky University, Bowling Green, KY
Taught one section of PSY 211 Research Methods Lab to undergraduate students. The Research Methods Lab included teaching laboratory exercises involving research design, methodology, data collection, methods of organizing and presenting data, and research report writing.
Supervisor: Brandy Tiernan Ph.D.

August-December 2012 **Graduate Instructor**
Department of Psychology Western Kentucky University, Bowling Green, KY
Taught two sections of PSY 211 Research Methods Lab to undergraduate students. The Research Methods Lab included teaching laboratory exercises involving research design, methodology, data collection, methods of organizing and presenting data, and research report writing.
Supervisor: Carrie Guggenmoss, M.A.

January-May 2012 **Graduate Instructor**
Department of Psychology Western Kentucky University, Bowling Green, KY
Taught one section of PSY 211 Research Methods Lab to undergraduate students. The Research Methods Lab included teaching laboratory exercises involving

research design, methodology, data collection, methods of organizing and presenting data, and research report writing.
Supervisor: Kelly Madole, Ph.D.

PROFESSIONAL ACTIVITIES

Gross, A. M . & **Weathers, L. N.** (2015, December 28). Bringing Psychiatry into the Wonderful World of Positive Psychology [Book Review of Positive Psychiatry: A Clinical Handbook]. *PsychCRITIQUES*, *60*, 52.

Ad hoc reviewer *Journal of Pediatric Psychology* 2014-2016

Abstract reviewer for APA Division 17: Positive Psychology April 2014

Ad hoc reviewer *Social Indicators Research* 2013

Ad hoc reviewer *Professional Psychology: Research and Practice* 2013

SERVICE WORK

October 2013 — **American Foundation for Suicide Prevention: Out of the Darkness Walk Committee Member**
Clinical-Disaster Research Center, University, MS
Assisted in walk planning, fundraising, and leading the event.

August-December 2008 — **Peer Leader for CORE 112**
Queens University of Charlotte, Charlotte, NC
CORE 112 is a liberal arts course designed to make students assess what it means to lead a noble life by examining noble individuals throughout history like Socrates, Martin Luther King Jr., and Wangari Maathai. A peer leader's job was to tutor and the help student learn and apply the material to their lives.

AWARDS

May 2013 — **Experimental Psychology Student of the Year**
Western Kentucky University, Bowling Green, KY

May 2012 — **Best Graduate Poster in the Social Sciences/Services, Session 3**
Western Kentucky University, Bowling Green, KY
The 42nd Annual WKU Student Research Conference
Poster: *Attention, support, and face-to-face self-disclosure as predictors of self-disclosure on Facebook*

May 2011 — **Psychology Student of the Year**
Queens University of Charlotte, Charlotte, NC

May 2011 — **Honors Thesis of the Year Award**
Queens University of Charlotte, Charlotte, NC
Awarded for the creation of *Motivations for self-disclosing on Facebook*

May 2009 — **CORE 222 Student of the Year**
Queens University of Charlotte, Charlotte, NC
CORE 222 is a liberal arts course, which engages students to think about world issues and global citizenship

MEDIA

L.N. Weathers (personal communication, August, 2009; Interviewed by the Charlotte Observer about Transition to University)

CERTIFICATION AND SPECIALIZED TRAINING

May 2017	**The Child and Adolescent Functional Assessment Scale (CAFAS) Training** *Communicare, Oxford, MS* Received training on how to assess the degree of impairment in youth with emotional, behavioral, psychiatric, or substance use problems. Supervisor: Dixie Church, LMF
April 2015	**American Red Cross Disaster Training in Psychological First Aid – Completion Certification**, **Northwest Mississippi Chapter** *Clinical Disaster Research Center, University, MS* Trained in counseling individuals in the immediate aftermath of a disaster Supervisor: Stefan Schulenberg, Ph.D.
August 2013	**Mindfulness and Character Strengths Practice Training** *Psychological Services Center, University, Mississippi, University, MS* Supervisor: Stefan Schulenberg, Ph.D.
October 2012	**Basic Skills for College Teaching Program Certification** *Western Kentucky University, Bowling Green, KY* Faculty Center for Excellence in Teaching Supervisor: W. Pitt Derryberry, Ph.D.
September 2011	**Test of Everyday Attention (TEA) Training** *Western Kentucky University, Bowling Green, KY* Received training on the TEA, a test that was designed to measure attention in adults in terms of attentional functioning, selective attention, sustained attention, and mental shifting. Supervisor: W. Pitt Derryberry, Ph.D.
April 2010	**Focus Group Training** *Department of Psychology, Queens University of Charlotte, Charlotte, NC* Supervisor: Cherie Clark, Ph.D.
April 2010	**Program Evaluation Training** *Department of Psychology, Queens University of Charlotte, Charlotte, NC* Supervisor: Cherie Clark, Ph.D.
May 2009	**Empathetic Listening Skills** *National Crime Victims Research and Treatment Center, Medical University of South Carolina, Charleston, SC* Supervisor: Alyssa Rheingold, Ph.D.
May 2009	**Trauma and Child Behavior Assessment Tools Training** *National Crime Victims Research and Treatment Center, Medical University of South Carolina, Charleston, SC* Supervisor: Josephine Stacey, Family Victim Advocate

CULTURAL SERVICE EXPERIENCES

May 2011	**South African Adventure** *Queens University of Charlotte, Charlotte, NC* Completed a study tour of South Africa designed to explore South Africa from metropolitan cities like Cape Town and Johannesburg to rural areas out in the Bush within the Kruger National Park. Also completed a service project to give back to the Mnisi Tribal Land community by painting the local school, Ntshuxeko Creche. Supervisors: Carrie DeJaco, Ph.D. and Mark Kelso, Ph.D.

March 2010 **Guatemala Land of Contrasts**
Queens University of Charlotte, Charlotte, NC
Competitive enrollment into a course that involved traveling to Guatemala to witness the spiritual life of Guatemala, the lives of Guatemalan women, and how far the country's progress since La Violencia. Completed a home-stay to experience Guatemalan way of life first hand. Completed a service project to aid the Fraternidad of Maya Presbyterials by organizing the site of the new women's center.
Supervisors: Diane Mowrey, Ph.D. and Linda Miller, Ph.D.

REFERENCES

*Available upon request